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ABSTRACT

Nine papers examine aspects of reverse-role tutoring in which students with handicaps are taught to tutor their non-handicapped peers. In the first, implementation strategies are discussed for conducting tutoring projects in special education. The second paper reports on a study in which 64 handicapped tutors demonstrated significant increases in reading achievement after a "total class" tutoring approach. The third paper documents that intellectually handicapped students can function effectively as tutors in a total class approach, given adequate training and supervision. The fourth paper describes a study in which behaviorally disordered students tutored gifted students in sign language and had positive effects on gifted students' attitudes towards their tutors. The fifth study examined whether a reverse-role tutoring program could be executed successfully within a 10-week period using 11 learning disabled and 11 non learning disabled fifth and sixth graders. The total class tutoring method was used with deaf adolescents and results are reported in study 6. In the seventh study, behavioral changes of behaviorally disordered students are examined after tutoring. Two review articles address research conducted with behaviorally disordered students and general tutoring research in special education. (CL)

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Handicapped Children as Tutors

Final Report (1984-85)

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Preface

During the first year of the "Handicapped Children as Tutors" project, basic questions were posed regarding the feasibility of reverse-role tutoring. Since so little previous research had been done in which handicapped students tutored nonhandicapped students, there was even some fear that the treatment might actually harm the students we were trying most to help--the tutors. One experience with an LD teacher remains very clear in the memory of the project staff. The teacher had a small resource room in which she taught about four LD students at a time. When the project director explained that we were interested in training her students as reading tutors, she looked back somewhat amazed and said, "I would be happy if you would train other students to tutor mine, but I cannot imagine my students as tutors--especially in reading. You are asking them to do the one thing they do worst--work with printed symbols. I just don't see how it can work."

Comments like these caused project staff to ask questions about the potential effects of reverse-role tutoring--both positive and negative. For example, in the case of cross-age reading tutoring, would the younger tutee progress so rapidly in the reading skills being taught that they would surpass the ability level of the handicapped tutor? In other words, would the learning disabled tutors be able to keep up with their nonhandicapped tutees? And what would occur in the tutor's mind if the tutee suddenly "knew more" than the tutor. Additionally, in the case of sign language peer tutoring, would the mentally retarded tutors be able to assume the role of tutor? Would they be able to maintain the tutoring role, or would the nonhandicapped students feel a natural urge to take over and continually "help" the tutor? Answers to such questions had to be obtained before addressing more specific effects of the treatment.

Since the data gathered during the first year of the project showed that reverse-role tutoring had largely positive effects on both tutors and tutees, project staff

were free during the second year to investigate a variety of questions which would have been premature during the first year. For example, if tutoring does have a number of positive effects on handicapped students, why is it so seldom used by special education teachers? What are the barriers to implementing tutoring? Are the implementation problems the same in both secondary and elementary schools, or are there features of secondary education which pose unique challenges to peer tutoring? During the first year of the project, all research took place in elementary schools, not allowing comparisons between the two settings. Another question arose as to the attitudes of the nonhandicapped tutees. While direct observation data had been gathered regarding the social acceptance of handicapped students who tutored, what about the attitudes of the tutees? Even though some students did not demonstrate observable improvements in their behaviors, could their attitudes have changed toward the handicapped students who were tutoring them?

Questions like these fueled the research during the second year of the project. In the first article included in the final report, implementation strategies are discussed for conducting tutoring projects in special education. The article is aimed primarily at special education teachers interested in implementing a tutoring program in their own school. In the second article a description is given of the cross-age reading studies which were conducted using the new implementation strategy of "total class" tutoring described in the first article. The third article gives an account of the strategy used in the peer tutoring studies in which the handicapped students teach sign language to their regular class peers. In the fourth article a unique study is reported in which behaviorally handicapped students tutored gifted students in sign language. It was in this study that the attitudinal question was addressed.

The fifth article describes a small study conducted with learning disabled students using the total class tutoring model. Important insights were gained from this study regarding the factors which lead to successful implementation of tutoring. The

sixth article describes a small pilot study in which the total class tutoring method was used with deaf adolescents. This study reports the first use of reverse-role tutoring in a secondary school, as well as its first application with hearing-impaired students.

The seventh article focuses on the question of whether tutoring affects the social behaviors of behaviorally disordered students. Again, this study goes beyond the initial question of social acceptance and investigates the issue of behavioral changes in the tutors themselves. This article is followed by two review articles written or revised during this year of the project. The first focuses exclusively on previous tutoring research conducted with behaviorally disordered students, while the second is a general review of tutoring research in special education. These review articles not only help to put the present project in perspective, but also provide a basis for further tutoring research.

REVERSING ROLES:
HANDICAPPED STUDENTS TUTORING REGULAR CLASS STUDENTS

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Running head: REVERSE-ROLE TUTORING

Special thanks go to Brent L. Top, Lenore Shisler, and William Eiserman of Brigham Young University and Thomas E. Scruggs of Utah State University who each played critical roles in the research which led to this article.

Support for the research reported in this article was provided by the Office of Special Education and Rehabilitative Services, U.S. Department of Education, Grant #G008300007. A version of this paper was presented at the annual meeting of the Council for Exceptional Children, Anaheim, CA, April, 1985.

Reversing Roles:
Handicapped Students Tutoring Regular Class Students

We often think of tutoring as a relatively new innovation in education because our image of schooling typically centers around a teacher in front of a group of students. But tutoring is one of the oldest forms of instruction known to society. As early as the first century A.D., Quintilian in his *Institutio Oratoria* described instructional settings where older children tutored younger children. Similar accounts of tutoring appeared in Germany between 1530 and 1550 (Paolitto, 1976), as well as in England in the late 1700's (Bell, 1797). In each of these cases, educators talked of the benefits coming to those who were delivering the instruction (tutors), as well as to those who were receiving it (tutees). For example, Bell (1797) often mentioned the improvements in tutors' behavior when they were required to teach other students.

Not until the mid 1900's did tutoring see a rebirth in society and did researchers begin to look seriously at tutoring as an alternative to teacher-led group instruction. In reviewing contemporary tutoring literature, it is interesting to note a gradual shift of emphasis from the tutee to the tutor. There is little question that tutors have always received some benefits from the experience, but only recently have those benefits been documented. When I reflect on my earlier involvement in tutoring research, I am often struck with how much data we missed by focusing almost exclusively on the tutee. We were so interested in measuring the academic growth of tutees that we often overlooked similar effects on the tutors. Recent reviews of tutoring research have shown that clear academic benefits accrue to both tutors and tutees (Cohen, Kulik, & Kulik, 1982). The ancient Latin dictum of, *Qui docet dicet* (one who teaches, learns) has now been empirically validated by comparing the academic achievement of students who act as tutors with those who do not.

The fact that tutors, as well as tutees, benefit from the tutoring experience has important implications for special education. Understandably, the vast majority of

tutoring research involving handicapped students has placed them in the role of tutee, rather than tutor. In a project we recently conducted in which learning disabled students were trained to tutor younger regular class students in reading, I remember well the reaction of the first teacher I approached. She had a small resource room in which she taught about four learning disabled students at a time. When I explained that we were interested in training her students as reading tutors, she looked back somewhat amazed and said, "I would be happy if you would train other students to tutor mine, but I cannot imagine my students as tutors--especially in reading. You are asking them to do the one thing they do worst--work with printed symbols. I just don't see how it can work."

Other teachers, fortunately, were more open to the idea. During the past two years we have trained over 200 students with a variety of handicapping conditions as tutors. Some of these students were in resource rooms and others in self-contained special education classrooms. Some were mildly handicapped, others more severe. Some learned sign language and taught it to peers from the regular classroom, while others tutored younger students in reading. But all of the handicapped students functioned as tutors. In essence, they reversed roles with regular class students who are nearly always seen as being more competent and more socially astute. The regular class students became somewhat *dependent* on the handicapped tutor, if even for a short period of time each day.

The results of this multi-study project have been both interesting and encouraging. Handicapped students can definitely serve as competent tutors, if they are provided with appropriate training and supervision. They can learn to demonstrate, monitor and give feedback. I never tire of watching mentally handicapped tutors reach over the desk and mold a tutee's fingers into the correct handshape, when teaching sign language. The results have shown further that social acceptance of handicapped tutors can be increased, as well as their perceptions of their own academic ability. In short the results of reverse-role tutoring research have

been generally positive. (See the following sources for more detailed descriptions of the research: Custer & Osguthorpe, 1983; Osguthorpe, 1984; Osguthorpe, et al., 1985; Top, 1984).

Given the positive results that we have obtained with reverse-role tutoring, my interests have turned to the question of why such programs are not more common in special education. What are the barriers that keep teachers from implementing tutoring projects with handicapped students? While I do not believe that the answer to this question is a simple one, I do see what we might call logistical problems as central to the dilemma. The challenge of getting handicapped students matched with tutees at a convenient time to both the regular and special education teachers seems to present major difficulties. In addition, working out schedules so that the student pairs are properly supervised during the tutoring adds to the the complexity of implementing such programs.

It is this challenge of program implementation that I would like to address in this article. During the past two years, working in a variety of settings, we have experimented with several options for implementing tutoring with handicapped students. In discussion with both special and regular education teachers, we have also devised other options which will be tested in the future. Each of the plans has its own unique strengths and weaknesses, but each has some merit in certain educational settings.

Resource Tutoring

During the first year of the project, we used a system which might best be termed "resource tutoring." The critical element in this model is not that it occurred in a resource room, because often it did not, but that it required that both tutors and tutees be pulled out of their normal classroom setting and go to another setting for the tutoring. Figure 1 depicts one study in which we used a resource model. The tutors came from a self-contained classroom for learning disabled students and the tutees

came from three regular first grade classrooms. As shown in the figure, three to four student pairs would come into the resource setting at a time, where they were supervised by a half-time teacher's aide. Tutoring occurred for 15 to 20 minutes each day, taking most of the morning for the aide.

One of the advantages of the resource model is that it does not require that either regular or special education teachers take time away from their class in order to supervise the tutoring. In fact, the model means that the teacher is able to spend more individualized time with the remaining students, while several are out for tutoring.

One clear disadvantage of this system, however, is the cost of providing a permanent additional staff member in the school (the half-time aide). A second problem with the model is the disruption that it causes in the make-up of a self-contained classroom. It is common knowledge among special educators that regular classroom teachers often resent the constant flux in the make-up of their class, with some students going to speech therapy, some to the resource room, and others to a Chapter 1 program. Simply keeping track of where each student is supposed to be throughout the day requires teacher time that they could better spend with students. Finally, we noticed that since teachers, themselves, were not required to supervise the tutoring, they seldom came to observe the program, and consequently did not fully understand it.

Total Class Tutoring

In order to overcome some of the disadvantages of the resource tutoring model, we have recently experimented with what might be called "total class tutoring." Rather than pulling a few students at a time from their normal classes, an entire class of tutors visits an entire class of tutees, all at the same time. Figure 2 illustrates an example of total class tutoring used in a recent study. In this example, 15 upper grade learning disabled (LD) students visited a kindergarten class twice each week for a 15 minute tutoring session in reading. In the actual study a half-time resource program also

contributed 10 students as tutors for the kindergarten class.

The kindergarten room with an adjoining hallway were large enough to accommodate all 50 students sitting in pairs on the floor. During each tutoring session there were at least four adults present to supervise the tutoring: the kindergarten teacher, the resource teacher, the LD teacher, and the LD teacher's aide. These supervisors each monitored approximately 6 tutoring pairs, mastery checking the tutee whenever the tutor felt that the child was ready to demonstrate mastery of a particular instructional step. Preliminary results have shown that tutors and tutees participating in the total class tutoring system made larger reading gains than did students in comparison groups.

We have now experimented with total class tutoring in six different settings including students with behavioral and intellectual handicaps, as well a learning disabilities. In one of the most interesting applications of the model, a class of 12 behaviorally handicapped (BH) students have taught sign language to 24 gifted and talented students, tutoring twice each week with half of the gifted students coming to the BH class, one session per week.

In each of the total class settings, several advantages to the system have been noted. First, and perhaps most importantly, the teachers have developed a greater degree of ownership for the program, than was observed during the previous year, when the resource tutoring model was used. Teachers are more apt to learn sign language in the sign language studies and more apt to integrate the reading into their curriculum in the the reading studies. Second, total class tutoring clearly requires much less outside assistance to initiate and much less continuing support, once the program has begun, making the system much more cost effective than the resource model. Using the resource tutoring model, a half-time aide was hired to cover each of the self-contained special education classrooms involved in the project during the first year. But with total class tutoring, a single half-time aide was able to initiate and supervise four separate self-contained classes in three schools 20 miles apart. Third,

scheduling problems were simplified using the total class model. Rather than periodically worrying about which students needed to leave the class for tutoring, the teacher simply went with all students, completing the tutoring in a single 15 minute session.

Lest the impression be given that all was well with the model, some drawbacks should also be mentioned. For example, one LD teacher commented that she preferred the resource model because she appreciated the additional time it allowed her to spend with individual students, while others went to tutoring. There is no question that the total class model requires more teacher time than the resource model, in which an aide carries the major load for training and monitoring the students. The system also poses some challenges regarding space and seating. Most classrooms do not have room for twice the number of students (although we've found that many of the special education classrooms are quite adequate because of the reduced number of handicapped students assigned to the self-contained setting).

Tailored Tutoring

While the total class model simplifies the implementation of a tutoring program, it may not always provide the flexibility needed for appropriately matching tutors with tutees. We have found that in order to reap maximum academic benefits for tutors, they should be teaching a student who is approximately one year below them in reading ability. The study involving kindergarten students made this type of matching difficult. For certain LD tutors the kindergarten (non-reader) level was appropriate because some of the tutors were reading at only a first grade level themselves. But for other tutors reading on a third grade level, it may be maximally effective to have them tutor a student reading on a second grade level. Thus, matching tutors with tutees would be a task of *tailoring* the tutoring to the specific needs of each student involved. Figure 3 depicts an example of such a program. As shown in the figure, a self-contained LD class has 2 students reading on a third grade level, 3 reading on a first grade level and

7 reading on a second grade level. These LD tutors would then be assigned to work with tutees reading one grade level below theirs.

While we have not yet experimented with the tailored tutoring model, we can envision that it could be arranged around a total class or resource configuration. For example, in Figure 3 the tutees could come from three different classes (3 from kindergarten, 2 from second and 7 from first grade), or they might all come from a single second or third grade classroom. Using the total class model, all tutees could come to the LD classroom at the same time and be monitored by the LD teacher and permanent teacher's aide. Using the resource model, the tutees could come in small groups to a separate room, perhaps in groups according to their reading level, and be supervised by an additional aide.

Ripple Tutoring

Because one of the main objectives in the sign language tutoring is to give handicapped students an opportunity to increase their social contact with other students, a model called "ripple tutoring" has been conceived. Figure 4 illustrates one possible application of ripple tutoring. As can be seen from the figure, an LD class would first tutor students in an intellectually handicapped (IH) class, after which all handicapped students would tutor regular class students from several grade levels. The ripple could obviously continue with regular class students also becoming tutors of other students.

The system might be especially appropriate for a school like one in a nearby district which has a small self-contained program for deaf students, but also has a class of intellectually handicapped students. The deaf students could first tutor the IH students in sign language, after which both groups could tutor regular class students. The ripple could continue until all students in the school were being exposed to sign language through a tutoring program.

The ripple tutoring system allows a school to begin a small tutoring program and

then expand it to meet the all students viewed as needing the experience. The idea is equally applicable within a single classroom. For example, a teacher may decide to try a cross-age or peer tutoring system with only two students. Perhaps one self-contained BH student is trained to tutor a younger regular class student in math or reading, after which the BH student is asked to train a BH classmate in the tutoring techniques, resulting in two tutors. These two then train two new classmates, repeating the cycle until all students needing the experience are involved in the tutoring. Because it allows for small beginnings, teachers can use the idea of ripple tutoring to familiarize themselves with the potential of such a program before implementing it on a broad scale. If the teacher is convinced that the system is meeting critical student needs after experimenting with only a few students, then broader implementation can be considered, without first spending excessive time training tutors and working out scheduling problems with other teachers and students.

Conclusions

Teachers and parents both recognize that we learn when we teach. The benefits of siblings tutoring each other are similar to the benefits of students in the classroom tutoring each other. Not only do tutors learn more about the subject they teach, but they also learn more about themselves and others. Some of the most interesting and compelling data that we have accumulated on reverse-role tutoring have come from parents of handicapped students. When interviewed regarding her perceptions of the peer sign language program, one parent of a learning disabled 10 year old boy said:

"When he is given an opportunity to teach others, it makes him more positive towards himself. ...I think that it (the tutoring) helped him to feel like he was on top of something."

Another parent said the following about her son in the same program:

"He often signed things like "I love you" and he showed his sisters how to sign it. As the youngest child he sometimes gets put down and signing was something he could do that his sisters couldn't. I think that he realizes ' I can do something on my own.' He can even sign some of the things that he sees on TV.

Said a third parent regarding her learning disabled daughter's participation as a reading tutor:

"She constantly talks about the tutoring. She is very proud of herself and what she was able to do. She took this tutoring very seriously. It was the highlight of her school year."

Inspite of the clear benefits of cross-age and peer tutoring, handicapped students seldom get the opportunity to function as tutors. The primary purpose of this article has been to describe a variety of ways to implement tutoring programs in which handicapped students are allowed to function as tutors. Four models have been described, each with unique strengths and weaknesses: 1) resource tutoring, 2) total class tutoring, 3) tailored tutoring, and 4) ripple tutoring. Special educators are encouraged to explore the benefits of each model by implementing tutoring projects of their own.

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Figure Captions

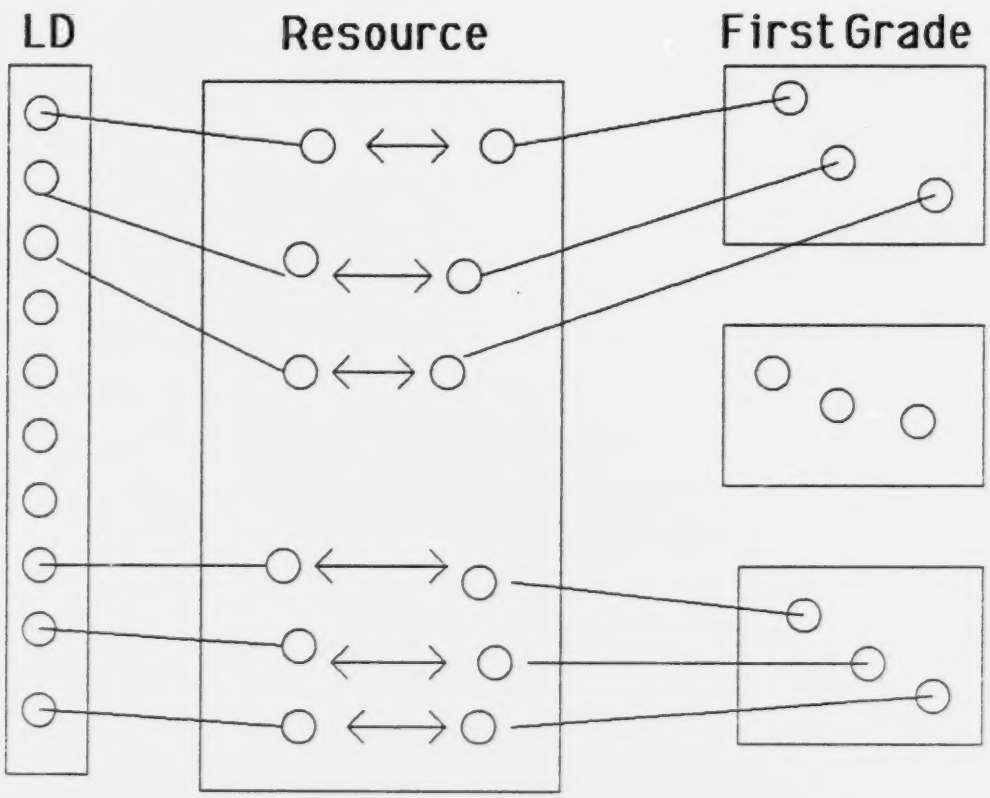
Figure 1. Resource tutoring.

Figure 2. Total class tutoring.

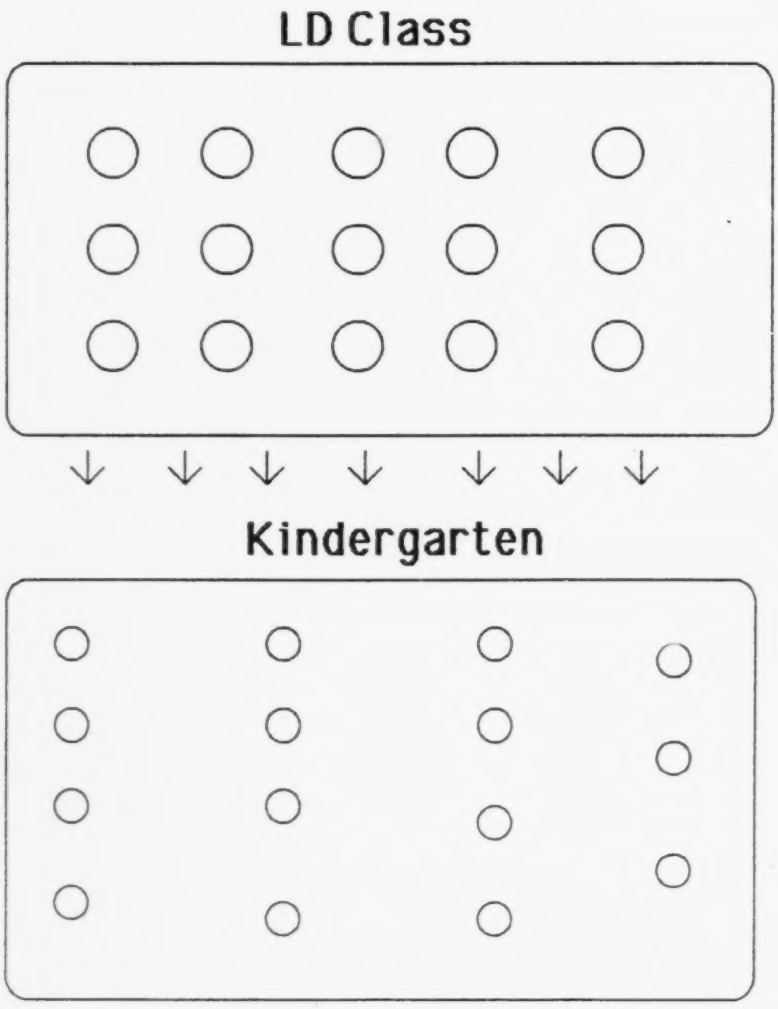
Figure 3. Tailored tutoring.

Figure 4. Ripple tutoring.

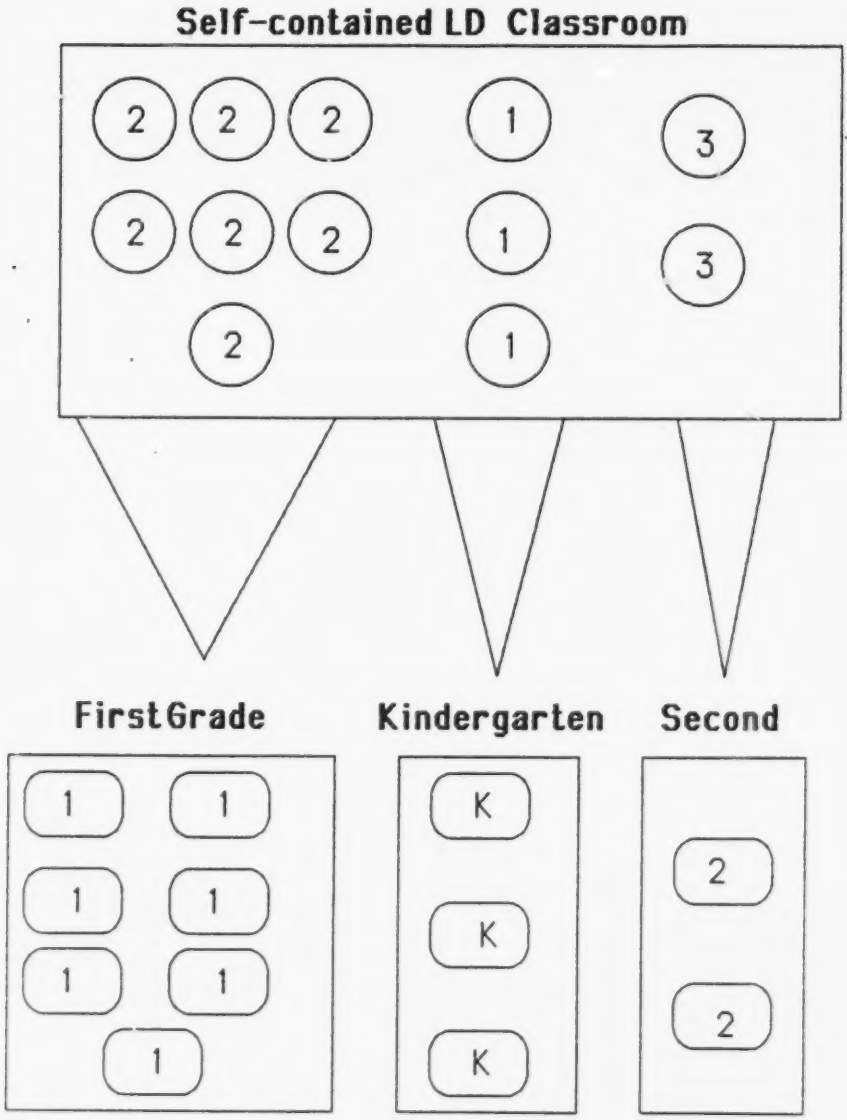
RESOURCE TUTORING



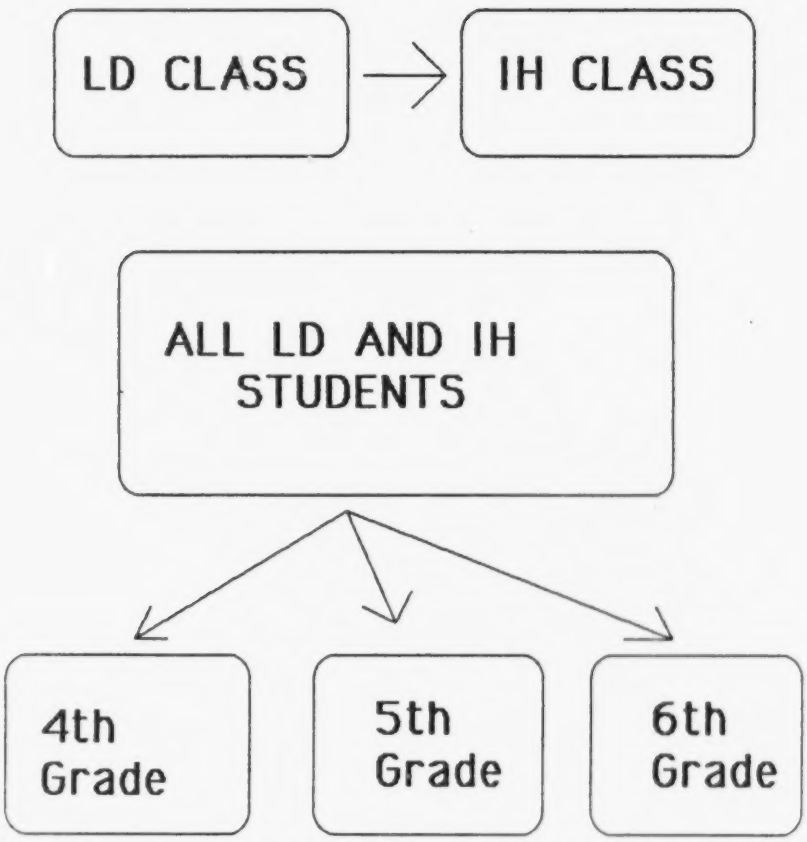
Total Class Tutoring



TAILORED TUTORING



RIPPLE TUTORING



The Effects of Reverse-Role Tutoring on Reading Achievement and Self-Concept

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Running head: REVERSE-ROLE TUTORING

Abstract

The purpose of this study was to measure the effects on both reading achievement and self-concept of having handicapped students tutor younger regular class children in reading. A total of 64 special education students were involved in the study with 32 students assigned by class to either a treatment or a control group. There were also 29 first-graders and 47 kindergarten students who participated as tutees in the study. Handicapped students tutored the younger children in reading for 15 minutes twice each week for 12-15 weeks. Handicapped students were tested on reading skills and self-concept both before and after the tutoring treatment was administered. Tutees were tested on reading skills using both criterion and normed reading tests. The results showed that handicapped tutors' self-concept was not significantly different from that of control students, but that tutors' reading achievement was significantly higher than those in the control group. Tutees' reading achievement as also significantly higher than that of control students on both criterion and normed tests. The implications of the results are discussed for special education.

The Effects of Reverse-Role Tutoring on Reading Achievement and Self-Concept

The benefits of having students tutor other students has been the topic of considerable research. Academic gains have often been cited as the primary benefit of such programs (Hassinger and Via, 1969; Houser, 1974; McWhorter and Levy, 1971; Strodtbeck and Granick, 1972). In addition to academic growth, self-esteem and socialization have also shown improvement through cross-age and peer tutoring programs (Gartner, Kohler, and Tiessman, 1971; Osguthorpe, 1980).

In spite of potential social, emotional and academic benefits, few well designed studies on tutoring have been conducted with handicapped students. The studies that have included handicapped students have usually used them as tutees rather than as tutors (McHale, Olley, Marcus, and Simeonsson, 1981; Kane and Alley, 1980; Travato and Bucher, 1980). Most tutoring research, however, has shown that tutors, as well as tutees, can benefit socially, emotionally and academically. It would appear that the group of students who have the most to gain from tutoring others are the least likely to participate in the research.

Osguthorpe (1984) identified "reverse-role" tutoring as a means for enhancing the self-concept and academic achievement of handicapped students. This involves reversing the traditional roles and allowing handicapped students to tutor regular class students. Recent studies have attempted to examine the effects of such reverse-role tutoring. Custer (1983) examined the effects on social integration when mentally retarded students tutored non-handicapped peers in sign language. In trying to determine if handicapped students could actually tutor in academic subjects, Top and Osguthorpe (1984) examined the effects on self-esteem and reading achievement when behaviorally handicapped students tutored younger nonhandicapped students in reading. Although previous research has yielded promising results, there is still a

need to conduct larger, more carefully designed studies of the effects of reverse-role tutoring.

The purpose of this study is to address specifically the following questions:

1. *Does reverse-role tutoring significantly improve the reading achievement of the handicapped tutors?*
2. *Is the general and academic self-esteem of the handicapped tutors significantly enhanced by tutoring nonhandicapped students?*
3. *Will the reading achievement of the nonhandicapped tutees increase significantly as a result of being tutored by the handicapped tutors?*

Method

Subjects

Students selected for participation in this study came from two of Utah's largest school districts, Davis county and Granite districts. Four elementary schools were selected for inclusion in this study because they each had self-contained classes of special education students. A total of 64 special education students were involved in the study--32 students each in the treatment and control groups. In Davis district, there were two self-contained classes of upper-grade elementary behaviorally handicapped (BH) students. There were also two self-contained classes of learning-disabled (LD) students, but one class had so few students that precluded it from reasonable comparison with the other class. As a result of this constraint, a self-contained unit of learning disabled students with a comparable number of students at an elementary school in the neighboring Granite school district was selected for participation. From these four self-contained units , one class with each type of disability was selected to be in the treatment group with the other classes serving as controls. Included in the treatment group were 12 BH students and 22 LD students. Two of the BH students were dropped from the tutoring project when they transferred to other educational settings, leaving 10 BH students in the treatment group. In the control group were 13 BH and 19 LD students.

In addition to the handicapped students in the study, there were also 29 first-graders and 47 kindergarten students who participated in the study. The two first-grade teachers identified the students in their classes who could benefit from tutoring in reading. From these 29 students 12 were randomly assigned to the treatment group as tutees, while the other 17 were assigned to a comparison group.

The kindergarten teachers requested that entire classes be involved in the study, rather than randomly assigning students within a class to treatment and control conditions. As a result of this request, the kindergarten class in the same school as the handicapped tutors was selected as the treatment or tutee group with another

kindergarten class in a neighboring school selected to be the comparison group. Twenty-five kindergarten students served as tutees in the treatment group with 22 controls.

Research Design

Because the intent of this year's study was to have entire classes of special education students involved in the tutoring experience, it was impossible to randomly assign students to different treatment groups. As a result, self-contained classes were randomly assigned to be either treatment or control groups. This precipitated a quasi-experimental research design since these self-contained special education classes formed naturally-assembled, interest groups rather than randomly-created groups. A "non-equivalent control group" design was utilized (Campbell & Stanley, 1966). This design utilizes a pretest and posttest for both treatment and control groups to establish equivalence and also to control for differences between groups due to history, maturation, testing, instrumentation, and other similar threats to validity.

This same research design was also utilized with the kindergarten students, since one kindergarten class was randomly assigned to be the treatment group and the other as a control. For the first grade students, however, random assignment to the respective groups was utilized. From the pool of 27 students identified by the two first grade teachers as needing additional reading help, 12 were randomly assigned to participate as tutees, with the remaining 15 as controls. It was decided to use a similar, yet slightly modified, "non-equivalent control group" design to control for any initial differences between groups and across class or socio-economic strata. By making the research designs similar for both groups of the study, consistency in data analysis was also insured.

Instruments Used

Three separate instruments were used with the handicapped subjects to measure the dependent variables of reading achievement and self-esteem. One standardized reading achievement test and two different types of standardized self-esteem instruments were administered.

For the first graders in this study, only one dependent variable--reading achievement, was measured. Two separate reading tests were utilized to measure that variable---one standardized and one criterion reading test.

Subtests 13,14, and 15 of the Woodcock-Johnson Psycho-Educational Battery, Part 2: Tests of Achievement, were administered before and after the tutoring experience as pretests and posttests, respectively. Subtest 13 was used to measure the students' letter and word identification skills, subtest 14 measured word attack skills, and subtest 15 measured passage comprehension. A composite or total score was also calculated based on all three subtests.

The Student's Perception of Ability Scale (SPAS) is a self-report questionnaire that has been used to measure academic self-concept and has reported particular success with handicapped students (Boersma and Chapman, 1978; Boersma, Chapman and Battle; 1979; Boersma, Chapman and Maguire, 1979). This self-report instrument was developed to measure a more specific part of the overall self-concept of elementary school children--the academic self-concept. It is comprised of 70 items or statements that respondents determine to be "like" or "unlike" themselves, marking "yes" if the statement is like them and "no" if unlike them.

Contained in this instrument are six subscales designed to measure different aspects of the total academic self-concept. These subscales include: academic ability, arithmetic, school satisfaction, reading/spelling, penmanship and confidence. This study focused on the total score and the three subscales believed to be most directly related to the treatment, such as academic ability, school satisfaction, and reading/spelling.

A different type of self-concept instrument was also selected for use in this study in response to concerns raised in the literature about the use of self-report, self-concept instruments with the handicapped (Top, 1984). The Inferred Self-Concept Scale (McDaniel, 1973) was developed with the underlying assumption that self-concept can be inferred from behavior. This assumption seems especially important for use with learning disabled and behaviorally handicapped students. The Inferred Self-Concept Scale consists of thirty statements about student behavior that the observer rates on a five point Likert rating scale. Both teachers and parents completed this scale as a pretest at the beginning of the school year and again as a posttest at the conclusion of the instructional treatment. Scoring is accomplished by adding the numbers in each column to give a total inferred self-concept score. The total score can be thought of as a point on a continuum between 30 and 150, with 30 representing a socially undesirable or negative self-concept and 150 representing a socially desirable or positive self-concept. Besides the total score, this study also examined the two subscales. Subscale A, comprised of 13 items is designed to measure "Self-Conformance" or interpersonal relationships. Subscale B consists of 11 items and measures "Self-Attitude."

The Beginning Reading I criterion diagnostic test was given as a pretest and administered at the conclusion of the treatment period as a criterion posttest to both kindergarten and first grade students (Harrison, 1980). The Beginning Reading I criterion test consists of five parts: consonant sounds, short vowel sounds, combination sounds, blending or decoding, and basic sight words.

Unlike the Beginning Reading I criterion tests that were used as both pretests and posttests, the Woodcock-Johnson reading subtests previously described were administered to the first-grade and kindergarten tutees and controls as a posttest only. Each of these instruments has been widely used and has demonstrated acceptable levels of reliability and validity.

Instructional Materials and Tutor Training

The instructional materials and the tutoring training procedures were adapted from the Beginning Reading I structured tutoring program developed by Harrison (1980). This structured tutoring manual was originally developed to be used by parents, aides or older students. Tutor training was designed to be self-instructional with the guidance of the training manual and a supplemental audio tape. For this particular study, however, the handicapped tutors could not be trained by the self-instructional manual because most of the tutors were deficient in reading abilities. As a result of this unique challenge, the handicapped tutors were trained collectively following the procedures for training handicapped tutors suggested by Osguthorpe (1984). This tutor training consisted of demonstrating and practicing four important tutoring skills: demonstrating the learning task, prompting the tutee as needed, monitoring tutee performance, and providing praise and corrective feedback.

Five one-half hour training sessions were conducted with the self-contained classes of handicapped tutors. The tutors were given the opportunity as part of the training sessions to practice the tutoring skills under the supervision of a paraprofessional aide who had been trained using the training manual and tape supplement. After the training sessions and several in-class practice sessions, each of the handicapped tutors were tested on the tutoring skills before they could actually begin tutoring.

The paraprofessional aide was trained in the tutoring skills outlined in the training and instructional materials. Training also included administrative skills of record keeping and monitoring student progress. The aide was also oriented to dealing with the handicapped tutors and the unique challenges associated with each type of handicap. The aide also provided supervision at the tutoring sessions and helped inservice the special education teachers who directly supervised the tutoring. Additional training and review of tutoring skills was provided as needed.

General Procedures

Written permission for participation in this study was obtained from the parents or guardians of all of the students involved in the study. Separate parental consent letters and permission forms were used for tutees, tutors and the students in the control groups. After parental consent was obtained, each of the handicapped tutors were pretested with the reading and self-esteem instruments.

The first graders and kindergarten students who were in the study were given the Beginning Reading I criterion diagnostic test. This pretest was done not only to determine if the younger students could indeed benefit from the tutoring and also to ensure statistical equivalence of the treatment and control groups.

The self-contained BH class conducted the tutoring of the first graders in the special education class. Those first graders who had been randomly assigned to the treatment group would be accompanied by the aide to the special education class for the tutoring session. An equal number of students were randomly selected from each first grade class. On Mondays and Wednesdays the tutees from one class were tutored and on Tuesdays and Thursdays the other group. The tutoring sessions lasted 15 minutes and were held for a period of 12 weeks.

The self-contained LD class of tutors went to the Kindergarten class where the tutoring sessions were held two days a week for 20 minutes each for a period of 15 weeks. The special education teachers, aides and the regular teachers supervised and monitored the tutoring sessions. To make the time on reading tasks comparable to the tutees, the first grade and kindergarten controls received additional help from their respective teachers and/or aides.

At the conclusion of the treatment period for each group, the self-esteem and reading posttests were administered to the handicapped tutors and controls. The criterion and standardized reading posttests were administered to the first grade and kindergarten tutees and controls.

After the posttest data were gathered the researcher interviewed the special

education teachers and first grade and kindergarten teachers of the students involved in the tutoring experience. In addition to interviewing the teachers of the tutors and tutees, 10 parents of the handicapped tutors and 10 parents of the tutees were randomly selected to be interviewed. To ensure consistency and reliability of these telephone interviews, a structured interview schedule was developed and utilized to gather information concerning teacher and parental perceptions of the tutoring experience. The use of the structured interview schedule also facilitated the summarizing and categorizing of the interview data for analysis.

Data Analysis

The research design of this study called for a pretest/posttest design with non-equivalent control groups. Such a design calls for analysis of covariance. The use of this design and the statistical procedure of analysis of covariance not only increases the statistical power of the design, but also adjusts for any pretreatment differences between the classes of tutors, tutees, and their respective control groups (Huck, Cormier and Bounds, 1974). This type of analysis provides a more sensitive statistical analysis than merely analyzing the posttest data.

A second condition also dictated the type of statistical analyses that could be appropriately used. Because of the potential for a relationship between many variables, such as reading ability and self-esteem; and that the data included simultaneous measurements on many variables of interest, a multivariate analysis was used (Johnson and Wichern, 1982). These conditions and the types of data collected made it necessary to conduct two different types of statistical analyses: a) multivariate analysis of covariance, and b) content analysis of the parental and teacher interview data.

Multivariate analysis of covariance made it possible to simultaneously measure the treatment effects on and relationships between many variables. Covariates were used to control for initial differences and were selected based their high correlation

with the variables of interest. For analysis of the handicapped students' data, two covariates were selected as being the most highly correlated variables (using Pearson correlation coefficients)--SPAS Total score and the Woodcock-Johnson Total reading score. These two covariates were used in the multivariate analysis of self-esteem and reading achievement data, respectively.

To measure the effects of the treatment on reading achievement and self-esteem of handicapped students, three separate multivariate analyses of covariance were conducted. Each of these multivariate analyses of covariance were repeated for each type of handicap (i.e LD, BH) represented by students in the study. This was done to examine how the tutoring experience might affect students with different types of handicapping conditions. The first analysis examined the three self-esteem posttest total scores and the Woodcock-Johnson reading posttest score. Since both the dependent variables of reading achievement and self-esteem were being examined simultaneously, both covariates were included in the analysis. The first analysis yielded a general or overall picture of the effects of the tutoring treatment on the total scores of self-esteem and reading achievement.

As a further examination of the effects of the tutoring, two additional analyses were conducted to examine more precisely the effects of the tutoring on specific aspects of self-esteem and reading skills. A second multivariate analysis of covariance was conducted to examine the treatment effects on the preselected self-esteem subscales. Since this analysis included only self-esteem variables, a single covariate was used (SPAS Total pretest score) with the reading covariate being dropped from the model.

The third multivariate analysis of covariance tested the effects of tutoring on specific reading skills as defined by the Woodcock-Johnson reading subtests. Since this analysis only examined reading achievement the self-esteem covariate was dropped from the model and only the Woodcock-Johnson Total reading pretest score was included as a covariate.

Since the study did not examine the effects of the tutoring on the self-esteem of the first grade and kindergarten students, two separate multivariate analyses of covariance were conducted to measure the treatment effects on overall reading ability and specific reading skills. A composite score on the criterion Beginning Reading I was calculated by summing the pretest scores of each of the five subtests. This composite pretest score served as the covariate for both analyses. The first analysis examined the treatment effects on the five subtests of the criterion posttest. These subtests were: consonant sounds, short vowel sounds, combination sounds, decoding or blending skills, and basic sight words. A second multivariate analysis of covariance was conducted to determine the effects of the treatment on the overall reading achievement and specific skills as defined by the standardized Woodcock-Johnson total score and subtest posttest scores.

Included in the multivariate analysis of covariance procedures is a statistical procedure that gives an adjusted posttest mean for both the treatment and control groups on each of the variables of interest. The adjusted means for the two groups represent the best possible estimate as to the mean scores the groups would have actually obtained on the posttest if each had scored identical scores on the pretest.

The content of the qualitative data gathered through the structured interviews with the parents and teachers were analyzed and reported in two ways. First, frequencies were reported in certain categories. Secondly, verbatim responses, examples and anecdotal descriptions of effects and suggestions for future administration of tutoring programs were also reported to confirm or disconfirm the quantitative data findings.

Results

This section will report the findings of the study in three separate areas of the research: (a) self-esteem and reading achievement of the handicapped tutors and controls, (b) reading achievement of the first grade and kindergarten tutees and controls, and (c) teacher and parental perceptions of the effectiveness of the tutoring program.

Self-Esteem and Reading Achievement of Handicapped Students

The first multivariate analysis of covariance indicated that on at least one of the self-esteem or reading posttests there existed significant differences between the treatment and control groups. The Hotelling's T^2 value was .473, with an F of 6.75 ($p < .01$). An examination of the univariate F-tests and the pretest, posttest, and adjusted mean scores, it can be seen that there was indeed a significant difference between the experimental groups on the Woodcock-Johnson Reading posttest total score ($p < .01$). The adjusted posttest mean for the control group was 475.2, in comparison to 486.8 for those handicapped students who tutored. Summarized in Table 1a are the univariate F-tests and the pretest, posttest, and adjusted means for each of the variables. As can be seen in this table, there were no statistically significant differences between the groups on any of the self-esteem posttests.

In an effort to understand more fully the effects of the tutoring experience on students of different types of handicaps, additional analyses were conducted on these same data for the behaviorally handicapped (BH) group of students and also for the learning disabled (LD) group. Similar results were found for each of the handicap groups as were reported for the total group. Only the reading achievement variable, Woodcock-Johnson Reading total posttest score, showed significant differences between those students who tutored and those who did not in each type of handicap classification. The BH tutors scored an adjusted posttest mean of 498.8 as compared

to 489.2 for the BH controls (F=8.1, $p < .01$). There were no statistically significant differences between tutors and controls on any of the self-esteem posttests. The specific F-tests, means, etc. for the BH students can be examined in Table 1b.

The LD tutors showed the greater gains on the Woodcock-Johnson Reading posttest total score than their BH counterparts. The LD treatment group's adjusted posttest mean score was 481.5 with the LD controls scoring an adjusted mean of only 465.5 (univariate F=27.9, $p < .01$). From Table 1c it can be seen that only the Woodcock-Johnson Reading total posttest score showed significant differences between the treatment and controls. There were no statistically significant differences on any of the three self-esteem posttests between those LD students who tutored and those who did not.

The second multivariate analysis of covariance examined the effects due to the tutoring treatment on the preselected self-esteem subscales. No significant differences on any of the self-esteem subscales were found to exist between the treatment and control groups. Similar results were found for each of the BH and LD groups, respectively.

A third multivariate analysis of covariance was conducted to examine the effects of the treatment on the specific reading skills as measured by the Woodcock-Johnson Reading subtests Letter-Word Identification, Word Attack, and Passage Comprehension. It can be seen from Table 2a that the treatment group scored significantly higher on each of the three Woodcock-Johnson Reading subtests than the controls. On the Letter-Word Identification subtest the treatment group's adjusted mean was 29.3 compared to 27.6 for the control group (F=4.7, $p <.05$). On the Word Attack subtest, the handicapped tutors' adjusted posttest mean was 13.2 correct responses compared to 10.0 for the handicapped controls (F=21.4, $p <.01$). Similarly, the tutors also had a significantly higher adjusted posttest mean score on the Passage Comprehension subtest. The tutors adjusted mean was 13.3 and the controls' 10.0 (F=17.7, $p <.01$).

Similar results were also found to exist for both the BH and LD groups. Table 2b reports the univariate F-tests, pretest, posttest and adjusted means on each of the reading subtests for the BH tutors and controls. No significant difference existed between the BH treatment and control groups on the Letter-Word Identification subtest. The treatment group did, however, score significantly higher on both the Word Attack and Passage Comprehension subtests. The BH tutors' Word Attack adjusted posttest mean was 13.9 compared to 11.7 for the controls ($F=9.5$, $p < .01$). On the Passage Comprehension subtest, the controls' adjusted posttest raw score mean was 12.6, which was significantly less than the tutors' adjusted mean of 15.9 ($F=12.3$, $p < .01$).

In Table 2c it can be seen that LD tutors, like BH tutors scored higher than controls on the reading tests. The LD tutors adjusted posttest means were significantly ($p < .01$) higher than the LD controls on each of the three subtests. On the Letter-Word Identification subtest the treatment and control groups' adjust posttest means were 27.1 and 24.4, respectively ($F=8.2$, $p < .01$). On the Word Attack subtest, the adjusted posttest mean for the LD controls was 9.1 compared to the LD tutors' significantly higher mean of 12.6 ($F=10.8$, $p < .01$). The Passage Comprehension subtest showed the greatest difference between the treatment and control groups. The LD tutors' adjusted posttest mean was 12.3 compared to 8.0 for the control group ($F= 15.0$, $p < .01$).

Reading Achievement of First Grade and Kindergarten Students

Since the first grade and kindergarten students were selected differently for assignment to treatment and control groups and experienced a slightly different tutoring configuration, it would be inappropriate to pool the results of the two groups and report them together. Therefore, separate multivariate analyses of covariance were conducted on the results of both the criterion and standardized reading tests for the first grade and kindergarten tutees and controls.

Reading Achievement of First Grade Tutees and Controls. On the

criterion Beginning Reading I posttest, the Hotelling's T^2 multivariate analysis of covariance value was .962 with an F value of 4.23 ($p < .01$). This indicates that there was a significant difference between the tutees and the controls on at least one of the five criterion reading subtests. Examining the univariate F-tests and adjusted posttest means that are found in Table 3, it can be seen that the first grade tutees scored significantly higher on the Short Vowel sounds as well as the Decoding skills. The tutees correctly recognized 4.7 out of five short vowel sounds, compared to 2.8 for the control students ($F=12.3$, $p < .01$). On the decoding or blending subtest, the tutees correctly pronounced an adjusted mean of 34.8 words out of a possible 55 compared to 15.9 for the controls ($F=11.5$, $p < .01$). As can be seen in Table 3, no significant differences between the treatment and control groups existed on the other three criterion post-treatment subtests of Consonant sounds, Combinations, and Basic Sight Words.

While it may be argued that the treatment group should indeed make significant gains on a criterion measure, the second multivariate analysis of covariance showed that there existed a significant difference on at least one of the variables of the standardized Woodcock-Johnson Reading posttest. Table 4 summarizes the multivariate tests of significance and the univariate F-tests with the obtained and adjusted posttest mean scores. No pretest scores are given in this table because the standardized Woodcock-Johnson reading test was administered as a posttest only and was analyzed using the composite or total Beginning Reading I criterion test score as the covariate. It can be seen from Table 4 that only the subtest Word Attack showed a statistically significant difference, due to treatment, between the two groups. The first grade tutees' adjusted posttest mean on the Word Attack subtest was 7.5 as compared to 3.9 for the controls ($F=6.6$, $p < .05$).

In summary, the results indicate that those first grade students who participated in the reverse-role tutoring experience as tutees made significantly greater gains on the criterion subtests which measured short vowel sounds and decoding. On the

standardized Woodcock-Johnson Reading posttest, these tutees also scored significantly higher than the controls on the Word Attack subtest.

Reading Achievement of the Kindergarten Students. Perhaps the most conclusive findings involved the kindergarten students of the study. On both the criterion and standardized reading tests, the treatment group of tutees made significantly greater gains on all of the variables of interest than the control group. Table 5 summarizes the pretest, posttest, adjusted means and univariate F-tests for each of the five subtests on the criterion Beginning Reading I posttest. On the consonant sounds the treatment group's adjusted mean was 15.3 compared to 12.3 for the controls ($F=8.9$, $p < .01$). The greatest difference occurred on the subtest measuring recognition of short vowel sounds. Out of a possible five short vowel sounds, the control group of kindergarten students' adjusted posttest mean was .6 compared to 3.6 for those kindergarten students tutored by the handicapped tutors ($F=60.2$, $p < .01$). Similar results showed significant treatment effects on the Combination sounds, Basic Sight Words, and Decoding. The controls' adjusted posttest means for these three subtests were .4, 2.6, .3 compared to the treatment group's adjusted means of 2.3, 8.2, and 8.6 on the same tests respectively. Each of these tests were significant at the .01 level.

As can be observed in Table 6, the kindergarten tutees scored significantly higher than their control counterparts on not only the total score of the standardized Woodcock-Johnson reading achievement test, but also on each of the three subtests. On the total posttest score, the treatment group obtained an adjusted mean of 421.3 compared to 403.4 for the controls ($F=15.6$, $p < .01$). On the Letter-Word Identification subtest, the adjusted posttest means for the treatment and control groups were 10.4 and 7.9, respectively. This was significant at the .05 level. The greatest differences were reported on the Word Attack and Passage Comprehension standardized subtests. On the Word Attack subtest, the kindergarten tutees had an adjusted posttest

mean of 2.8 compared to only .6 for the controls (F=12.2). Perhaps the most impressive result was the impact of the treatment on passage comprehension. The kindergarten tutees were able to correctly comprehend 2.1 sentences on the standardized test, compared to the kindergarten controls average comprehension of only .5 sentences (F=15.2). Each of these subtests were found to be significant at < .01. No pretest data are reported in Table 6 since the Woodcock-Johnson standardized reading test was administered as a posttest only and was analyzed using the composite or total Beginning Reading I criterion pretest as the covariate.

In summary, it can be seen from Tables 5 and 6 that the kindergarten students who participated in the reverse-role tutoring program as tutees made significantly greater gains on all of the subtests and variables of interest on both criterion and standardized measures.

Teacher and Parental Perceptions of the Tutoring Program

The teachers of the first-graders and kindergarten students who served as tutees as well as the teachers of the handicapped tutors were all interviewed regarding their perceptions of the effectiveness of this program. Ten parents of handicapped tutors and ten parents of the tutees were also randomly selected to be interviewed regarding their feeling about the tutoring experience of their children.
A summary of these interviews and their anecdotal reports will be given in this section of the report.

Teacher Perceptions. All six of the teachers involved in the study (100%) expressed "Very Positive" feelings about the program and reported that their students also had "Very Positive" feelings about their involvement in this program. Each of the teachers also reported that there were observable benefits or effects of the tutoring experience on both the tutors and tutees. In addition to the most obvious reading improvement, all of the teachers cited improved self-concept for both groups. As one teacher reported, "The younger kids began to have an 'I can do this!' attitude and felt

better about their own abilities, and the older kids felt good about being able to be of service in helping others instead of always receiving help." Two of the teachers of the handicapped tutors also reported that one of the most important effects was that their students developed greater responsibility and self-discipline. As one of them reported, "They learned to 'stick to it' even when it wasn't always fun."

In responding to the question of "Strengths" and "Weaknesses" of the program, the teachers consistently reported that the strengths far outweigh the weaknesses or inconveniences. The most commonly reported weakness was the problem of supervision and monitoring student progress with the larger group. Even with this apparent weakness, the teachers were unanimous in their support of doing the tutoring as an entire class rather than pulling out small groups of tutors and tutees at different times. The most commonly cited strength of this tutoring configuration was that it was less disruptive to the teachers' schedules. As one first grade teacher said, "I knew that at a certain time each day the students would go to be tutored and then it would be over for the rest of the day. It was much easier to schedule their reading groups so that they wouldn't miss something in class while they were at tutoring." In addition to this ease of scheduling, a most interesting and unexpected benefit of having all of the students tutor together was identified by the LD teacher. She reported, "The experience was much more positive this year than last, because as the students tutored all together there was a feeling of 'sharing' and being together provided continual social reinforcement." We also noticed that the students were less likely to tire of the tutoring, because they all did it together as part of their regular classroom experience.

All of these teachers expressed the desire to have this program continued and/or expanded in the schools and a desire to have their own students participate again next year. "The experience was so positive and the benefits so obvious," reported the kindergarten teacher, "that the other teachers in the school began to express interest in the program and expressed the desire to have their own students

involved." She also reported that the other kindergarten teacher who had initially refused to have her students be tutored by the LD students felt bad about her original decision and wanted now to have her students participate. First grade teachers expressed special interest in the program when they observed the effects of the tutoring on the kindergarten students.

In summary, the teachers were overwhelmingly supportive of the program and felt strongly that the observed benefits for both tutor and tutee made it a desirable program to be continued and expanded not only in their schools, but also in other schools in the district and state.

Parents' of Tutees Perceptions. Five parents of tutees from each of the first grade and kindergarten groups were interviewed. The parents of these tutees were all overwhelmingly supportive of the program and felt that their child had benefited from the experience. The parents of the kindergarten tutees seemed more enthusiastic about the program, although 100% of tutees' parents reported their feelings concerning the tutoring program as "Very Positive." This may be because the reading growth of the kindergarten tutees was more noticeable than for the first graders and also because there was greater contact with the program through the kindergarten teacher than through first grade teachers. Seven (70%) of these parents stated that they had initial concerns about having their child tutored by students from the special education class, but all of these also said that these concerns dissipated as the program progressed and as they observed their child's feelings and saw the reading growth.

The most commonly cited effect or benefit for the tutees, as cited by these parents, was the impact on their reading ability. One mother expressed amazement when her five year old daughter brought home a little booklet form school and could read the entire book. In addition to the reading growth, many parents cited a general improvement of attitude toward school, reading and learning in general. One mother reported, "He just seemed to love to go to school. He thought the tutoring was really

fun and viewed his tutor as his friend." Self-esteem was also cited by 80% of these parents as a major benefit of their child's participation in the tutoring experience. All (100%) of these parents expressed the desire that their child be able to participate again in this or a similar tutoring program in the future. They were unanimous in their support for the continuation and/or expansion of similar reverse-role tutoring programs. Their feelings can be described as overwhelmingly positive and enthusiastic.

Parents' of Tutors Perceptions. None of the parents interviewed expressed "Negative" or "Very Negative" feelings concerning this tutoring program. In contrast, 80% of the tutors' parents interviewed described their feelings about the tutoring program as "Very Positive" with 20% citing "Positive" as their feelings. These parents were overwhelmingly in agreement that the most important benefit or effect of this tutoring experience was the child's improved self-esteem. All of the parents reported that their child felt better about himself, more worthwhile, or took pride in the tutoring he was doing. Similarly, 80% reported that they felt that their child's reading abilities had improved, with the other 20% reporting no observable change. These same parents felt that it was important to allow the handicapped students an opportunity to do something for others. A few of the parents reported that they had initial concerns about having their child participate in such a program. Their reasons differed, but included such concerns as not being able to tutor in an academic subject, fear of inappropriate behavior, and the concern that they may miss out on more important academic work of their own. All of these parents reported that as the program progressed and as they talked with their child and the teacher these concerns were eliminated. All of these parents of handicapped tutors also were overwhelmingly supportive of the program and expressed the hope that it be continued and that their child be able to participate in a similar program.

In summarizing the results, it is important to once again note that the quantitative results showed significant gains for both tutors and tutees on the reading achievement posttests. While the statistical analyses of the standardized self-esteem

posttests yielded no significant differences between those who tutored and those who did not, it was reported by the qualitative reports of parents and teachers to be one of the main benefits of reverse-role tutoring. The parents and teachers were overwhelmingly positive in their perceptions of the strengths of this tutoring program and in their desire to see such programs continue and expand.

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Intellectually Handicapped Students as Tutors: Implementing Total Class Tutoring

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Running Head: INTELLECTUALLY HANDICAPPED TUTORS

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Intellectually Handicapped Students as Tutors:
Implementing Total Class Tutoring

While previous research has shown that handicapped students reap important benefits from tutoring their nonhandicapped peers, the question still remains as to why more special educators do not use tutoring in their classrooms. The purpose of this article is to describe the results obtained during the second year of research project investigating the effects of reverse-role tutoring. During the first year of the project, students with a variety of handicapping conditions were trained to tutor nonhandicapped students in either reading or sign language. The results of these studies showed that handicapped tutors gained both social and academic benefits, when compared with those who did not function as tutors (Custer & Osguthorpe, 1983; and Osguthorpe, et al., 1984).

However, simply because tutoring has been shown to have positive effects does not necessarily mean that teachers will begin to use it in their classrooms. Intervention strategies must be comfortable to implement, as well as effective, if widespread dissemination is to occur. Although different models have been described for implementing tutoring projects, little research has been reported testing the effectiveness of such models (Osguthorpe, 1985). Only anecdotal information was gathered during the first year of the present study regarding implementation strategies. It was this data that suggested a need for experimenting with alternate tutoring models.

For example, a resource model of tutoring was used during the first year of the current project in which four handicapped students (from a self-contained classroom) went to a resource room to tutor four nonhandicapped students. While the resource model had certain advantages as an implementation strategy, it required the added salary of a full-time teacher aide and meant that both handicapped and nonhandicapped students had to leave their regular classroom for a period of time each

day.

The question arose during the second year regarding the possibility of asking all students in a self-contained class to tutor simultaneously. Using this "total class tutoring" method, a class of 15 intellectually handicapped (IH) students would tutor another 15 nonhandicapped students under the supervision of their assigned teachers, rather than depending on the services of an additional classroom aide. Since the resource model had been used previously, the following comparative questions could be posed:

1) Will IH students be able to function as effectively as sign language tutors, when using total class tutoring, as opposed to resource tutoring?

2) What are the attitudes of students, both handicapped and nonhandicapped toward total class tutoring?

3) What are teachers' attitudes toward total class tutoring, compared with their feelings about the resource model?

4) When using total class tutoring, will IH students experience increased social acceptance, as they had with resource tutoring?

Method

Subjects and Settings

The studies were conducted in a suburban school district that was primarily Caucasian middle class consisting of agriculture and light industry occupations. Three self-contained IH students' classrooms were selected for participation in the studies. Classrooms A and B were in the same school, while classroom C was in another school. The three classrooms differed in the following ways:

1) One of the teachers (classroom A) had in the previous year involved her students in the peer tutoring project using the resource model, while the other two teachers (classroom B and C) had no previous peer tutoring experience.

2) The abilities of students in the three classrooms differed: a) Classroom A contained students from fifth and sixth grades who were classified as intellectually and severally intellectually handicapped, b) Classroom B contained students from third and fourth grades classified as IH, severely IH, and multiply handicapped, and c) Classroom C contained students from third through fifth grades who were classified as mildly IH.

All of the students in each of the IH classes participated in the studies: 40 IH students. These students were classified according to state guidelines for classifying handicapped students. Of the 11 students in Classroom A, 3 were classified as severely intellectually handicapped while 8 were classified as intellectually handicapped . Classroom B contained 15 students of which all were classified as intellectually handicapped . Classroom C contained 14 students of which 1 was

classified as multiply handicapped, 2 were classified as severely intellectually handicapped and 11 were classified as intellectually handicapped For the sake of simplicity, students in all three classrooms will be referred to in this article as intellectually handicapped (IH). However, it should be kept in mind that students in each group possessed unique strengths and weaknesses. For example, five students in Classroom A, four students in Classroom B and two in Classroom C had been diagnosed as having Downs Syndrome, while the cause of retardation for the other students had not been specified. Communication and social skills in all three classes ranged from mildly to severely delayed, with some students being able to receive and express themselves in both spoken and written language, while other students were essentially nonvocal and unable to read or write at a first grade level.

The 60 regular class students included as tutees in the studies were selected from age-mates of the handicapped students. They were selected by asking regular classroom teachers to nominate students whom they thought would benefit from participating in the program and whose regular academic work would not suffer from participation.

Tutoring Materials and Procedures

Training materials for implementing the studies were developed from existing materials used in the previous year's study. Prompt cards were used on which the handicapped tutor saw a photograph of the object or word, graphic representation of the hand shapes (signs), and the printed word to be signed. The reverse side of the cards displayed only the printed word to be signed. Groups of cards were mounted on rings attached to wooden table easels enabling the cards to stand independently and the tutor to flip from one card to the next. Sign language vocabulary used in these materials included numbers, colors, the alphabet, a number of complete sentences and 175 nouns and verbs familiar to the handicapped students.

Before tutoring began, the tutors were taught to sign the alphabet, their names, and approximately 45 simple signs. Training sessions of twenty minutes in length were conducted each day for five weeks, involving the entire class. Because Classroom A students had been involved in the tutoring the previous year, they were refreshed on their tutoring and sign language skills for three weeks and then began assisting with the training of Classroom B students who were learning the skills for the first time. By the sixth week, the aide (hired part-time for the studies) started working with one or two students at a time, training the students in both signing and tutoring skills. The teachers permitted time for the aide to continue training throughout the duration of the studies in order to keep the tutors ahead of the tutees in learning new signs. Two-thirds of the vocabulary were taught to the tutors after the tutoring had begun.

Measures and Procedures

Four instruments were used to measure the effects of the treatment on interaction, self esteem and the degree to which the treatment was effectively implemented. Free-play interaction data between handicapped and regular class students were collected for each handicapped tutor using a Free-play Interaction Form. This form included the date, duration of interactions between handicapped and regular class students, the names of the students involved in the interactions, notation if the regular class students involved in the interaction were tutees or students not in the tutoring study, and a positive or negative interaction rating from the observer. Because it was necessary for the observer to be well acquainted with both the tutees and the tutors in order to identify them from various distances on the playground, the aide was trained as the free-play observer. This enabled observations to be made regularly at lunch and recess free-play time.

One interview instrument was used for conducting interviews with the tutors' parents at the end of the study. A random selection of 20 parents was made with

approximately 50% of the parents of each class represented in this sample. For purposes of comparison, the same interview instrument was used in this study as in the previous years' study. The Interview Guide consisted of forced-choice and open-ended questions eliciting general reactions to the tutoring program. Using this guide, interviewers asked tutors' parents to describe their child's feelings about the experience and if they had noticed any changes in social interaction. Analysis of the interviews was made by calculating the frequency of various responses given and assigning each response to the most appropriate category. Once categorized, percentages of responses in each area were calculated.

Teachers were interviewed using a Teachers' Interview Guide with respect to their perceptions of social acceptance and self esteem effects as well as with respect to the feasibility of implementation of "total class tutoring". The teachers were asked to describe changes which they saw in their students which they attributed, at least in part, to the tutoring experience. They were also asked to describe how they implemented the tutoring program from start to finish and what problems and successful experiences they had had along they way. Analysis of the teacher interviews were made using the same procedure for the parental interviews.

The fourth measure taken was observations of the tutoring. Observations were made of each tutoring session by the aide and teachers. These observations helped address feasibility of implementation questions, such as: Are two adults able to successfully monitor the tutoring of approximately 20 students? The content of this data was analyzed and will be used in both reduced and anecdotal form in this article.

Results and Discussion

In this section the results will be given of free-play observations, parent interviews, teacher interviews and tutoring observations. The results were found to be consistent across the three classes and therefore will be summarized and presented together. In

the case of the teacher interviews, however, results will be presented separately for each study in order to highlight the uniqueness of each teacher's experience.

Free-play observations

The results of the free-play observations were summarized in the following ways: 1) All data were converted to percentages of observation time spend in positive interaction with regular-class students; 2) means were calculated for "before" and "during" treatment totals. The means are based on an average of seven 12 minute observations prior to the treatment and thirteen 12 minute observations during the treatment period. Because of important differences among the classes, the data for each class were analyzed separately by computing a paired t-test comparing "before" and "during" treatment means for each of the three classes.

The results of the analyses showed that all three classes spent significantly more time interacting with nonhandicapped students after the tutoring began. As can be seen from Figure 1, Class A spent an average of 19% of their time interacting with nonhandicapped students *prior* to the tutoring and 35% *during* the treatment period. When these results are compared with those obtained the previous year, it is interesting to note that the percentage of interaction continued to increase. When "before" treatment observations were made the previous year, this class was positively interacting with regular class students 4 % of the time. "During" treatment observations made the previous year indicated a significant increase to 11% of the time, $t(16) = -2.66$, $p < .017$. Since the setting and students remained largely unchanged from the first to second year, these findings are especially important. The data suggest that, rather than having an early ceiling effect, reverse-role tutoring can continue to impact positively on the social acceptance of handicapped students.

As shown in Figure 1, results of free-play observation were even more disparate for Classes B and C. Generally speaking, these two classes were not interacting with

nonhandicapped students prior to the tutoring, and spent more than 20% of their time with nonhandicapped peers during the treatment period (Class B, $t(14) = -6.29$, $p < .001$; Class C, $t(14) = -4.53$, $p < .001$). Thus, after a 12-14 week treatment period, intellectually handicapped students in Classes B and C spent 5 times as much of their free-play period with nonhandicapped peers.

These findings are especially meaningful when compared with the results of Class A. One could hypothesize that once integration increases with a subgroup in a school, the phenomenon will generalize to other groups within the same school and all handicapped students will experience a greater degree of social acceptance. The results of this study would not support such a position. Since Classes A and B were in the same school, one might expect that Class B would reap some of the benefits being experienced by Class A. But the observations taken prior to the tutoring revealed that while Class A seemed to have a carry-over effect from the previous year, the positive effects did not transfer to Class B. Not until tutoring began did Class B begin to interact with their nonhandicapped peers to any appreciable way. Since the students in Class B were younger than those in Class A, it would be logical to assume that nonhandicapped tutees would not see themselves as peers of the younger group, and therefore not be inclined to play with them. Whatever the explanation of the differences between the two classes, it is important to note that the introduction of the tutoring treatment had effects that were practically, as well as statistically significant.

Parent Interviews

Parents of 20 tutors were interviewed. In describing their child's feelings about the tutoring program, all parents reported that their child had positive or very positive feelings toward the program. These results are consistent with the previous year's results.

When asked if their child's social interaction had been affected, 80% (16) of the

parents who were interviewed reported noticing some improvement. Three of these parents remarked that while the improvements in interactions were relatively minor, those small changes were significant because of their child's severe lack of social interaction previous to the tutoring project.

When asked if the tutoring experience had had an effect on how children "felt about themselves", 90% (18) of the parents reported that they perceived a noticeable improvement in their child's self-esteem. While two parents reported no perceived change, they also explained that self-esteem was not an area in which they had felt their child needed improvement. In the previous year, 64% of the parents reported such a change.

Because in the previous year approximately half of the parents described improvements in their child's communication skills, this year, an item was added to the interview protocol to address this issue. A total of 70% (14) of the parents interviewed reported improvements in their child's communication skills while 30% (6) reported no noticeable change in this area.

Teacher Interviews

The results of the interviews with the teachers indicated that all three of the teachers perceived a number of benefits to the students due to their involvement in the tutoring program. Teacher A noted an increase in interaction between her students and students from other classes. "The children in the other classes have been really nice. They come over and invite my students to go outside and play, or to jump the rope. This didn't happen as much before the tutoring program." Teacher C explained that one of the main benefits she perceived of the program was the communication between her students and other regular students. Said she, "When the students have the chance to interact about something they are both interested in doing, learning sign language, they open up a channel between them."

Because the handicapped students are in the tutoring role, compensation has been made for some of the imbalance between the students so that they can have friendly interactions. Teacher B commented, " My students have more visibility in the school now, and its a positive kind of visibility for once. They are viewed as different and unique, but not in a negative sense. Let me tell you, this is not the way it usually is in schools." According to the teacher of Class A, her students seem to be somewhat intriguing to the regular students. "We didn't expect the regular students and mine to be on equal terms. They couldn't be that. The regular kids come into our classroom knowing that my students are handicapped. But they are having friendly relationships. The regular students have a proper perception of my students. Sometimes the regular students write little notes to my students. One day, they made a little award for Donna when she was in the international Special Olympics. Its things like that that tell me the tutoring is doing good things."

Not only did the teachers see changes occur in the acceptance of the students around the immediate classroom, she noted an increase in general acceptance in the school and in self-esteem. Teacher A explained, "The signing skill enabled my students to participate in the Christmas program with the choir this year. That put them out in front of everyone, which was really good for them all." Teacher C reported that the signing skill enabled her children to participate in several school programs in which they were able to actually have a unique talent. Teacher C also referred to self-esteem gains, commenting that self-esteem improved because they were teaching other students. Teacher B explained how this relates to her students. "This usually doesn't happen for our children. Usually they are being taught. Now they get to be the teacher. That really builds confidence."

While the teachers each emphasized the importance of all the benefits of the tutoring program Teacher B clarified that the results are gradual." They develop in a lot of ways from this experience. Its clear to me. They learn to take the risk of learning

something new, of developing new relationships. I've seen growth, emotional growth. But it happens very gradually; day to day." Teacher A noticed that the change in the regular students attitudes was also gradual. "For a while, I wasn't sure how much of an attitude change was occurring in the regular students. Every once in a while I'd hear a positive comment or see a friendly interaction, and then I'd realize that I was seeing the result. These became more and more frequent as time went on." Teacher C found the same to be true in her school and recalls an incident. "One day I ran into a lady who was the mother of one of the girls who is a tutee in the program. She told me , 'I'm so glad she is in the tutoring program. It was really changed her ideas about those kids of yours. She really enjoys it and I wouldn't have her miss it for anything. The change in attitude and understanding of the special ed. kids is well worth it.' "

When asked to describe problems or difficulties which arose during implementation of the tutoring program, all of the teachers explained that the only problem was with the organization of sign language materials. Because of the large number of sets of materials and the eleven tutoring pairs, at times it was difficult to assure that each tutoring pair was covering all of the materials. Teacher B explained, "After we identified the problem, we started a log which each tutoring pair would keep of their daily tutoring activities. This way we were able to keep track of what they were doing." Other than this one problem, all teachers found the total class tutoring convenient and effective. Teacher A clarified, "But I couldn't have done it alone. With the added help of the aide, it works. Otherwise, no way."

When asked to estimate the maximum number of students they could include in total class tutoring all of the teachers suggested that approximately 25-30 students (both tutors and tutees) was about all two adults could supervise effectively. When given the choice between total class tutoring and one of the other configurations, all three teachers chose total class tutoring. Teacher A, who had experienced Resource Tutoring the previous year, explained the advantages of total class tutoring. " First of all,

I get to be a part of the tutoring whereas with resource tutoring I had to stay with the rest of the students while just a few tutored at a time. Second, it's much more efficient to have one time in the day set aside to do the tutoring and to get it all over with at once. Third, I think the students handle it better when they all are doing the tutoring at the same time. Otherwise, someone always felt like they were missing out. That tended to cause a lot of commotion." While each of the other two teachers commented similarly, Teacher C added, "Having all the kids, about 30 in total, working together is really nice because they all get to meet and interact with one another. If we had resource tutoring, that benefit would be limited drastically."

Regular Class Teacher Interviews

The results of the interviews with the regular class teachers whose students participated as tutees in the study indicated that all of the teachers viewed the greatest benefit to their students as the opportunity to make friendships with some of the handicapped students. One teacher mentioned, " The IH students play by themselves most of the time. They don't have much experience interacting with others. My students don't have much experience interacting with other students who aren't exactly on their level." Another teacher explained that she noticed friendships growing during the year, although it was gradual. Further, she mentioned, "I've noticed my students caring more about the IH students welfare. Occasionally I heard them make comments defending the IH students when some sort of a derogatory comment had been made by another student who had not been in the tutoring program."

The only suggestion made by the teachers was to involve more of their students. This would improve the program for several reasons. First, some of the students grew tired of the signing mainly because they were learning the signs so quickly and there weren't enough materials for them to be always learning something new. Second, the enthusiasm to do the signing and to be involved in the tutoring program was

contagious. One teacher explained, "It didn't take long before my entire class was pleading to go do the signing." Third, it would provide more students the opportunity to receive the benefits which come to those involved. A teacher mentioned, "I have seen a real change in attitude toward the IH students. I wish I could get all of my students involved because it would help them all."

Tutoring Observations

Observations made by the aide and the researchers indicated that the handicapped students were able to function effectively as tutors of sign language. The daily log kept by the students included a rating from the aide regarding the tutoring skills. These ratings indicated that the students were able to maintain the tutor/tutee relationships (with the tutees taking charge of the tutors, which might have been the case) and that the tutors consistently performed the tutoring skills of giving feedback, monitoring learner performance and clear demonstration of the signs being taught.

While the total class tutoring model could have posed a problem for monitoring the tutoring and for determining how effective the tutoring relationships were, the tutoring logs were found to be very helpful to the adult monitors making these observations.

Conclusions

The following conclusions can be drawn from the data collected in this research project:

1. When given appropriate training, IH students can function effectively as tutors in a "total class tutoring " configuration, if adequate adult supervision is provided. Given this circumstance, IH students can learn to demonstrate instructional content, monitor tutee performance, and give appropriate feedback. While some students develop these skills more readily than other students, even those with more severe handicaps are able to function as tutors in a "total class tutoring" setting.

2. Both tutors and tutees experience growth in the topic being tutored. This conclusion is important because with more students present during tutoring, learning could suffer, due to demands for increased teacher supervision. But students who participated in the total class tutoring model became as proficient at sign language as those in previous studies who experienced a resource model.

3. Socially isolated handicapped students often experience increased social acceptance as a result of tutoring nonhandicapped peers in a "total class tutoring" configuration. While not all of the handicapped tutors showed marked increases in social interaction, some made impressive gains. These gains are comparable with the previous findings regarding the resource model.

4. Parental attitudes toward total class tutoring were highly positive, suggesting that they perceived a definite value in the experience for their children.

5. Teachers perceived total class peer tutoring as an effective intervention strategy in special education for improving social acceptance of socially isolated handicapped students. Further, the teachers perceived total class tutoring as an effective tutoring configuration to use in their classrooms.

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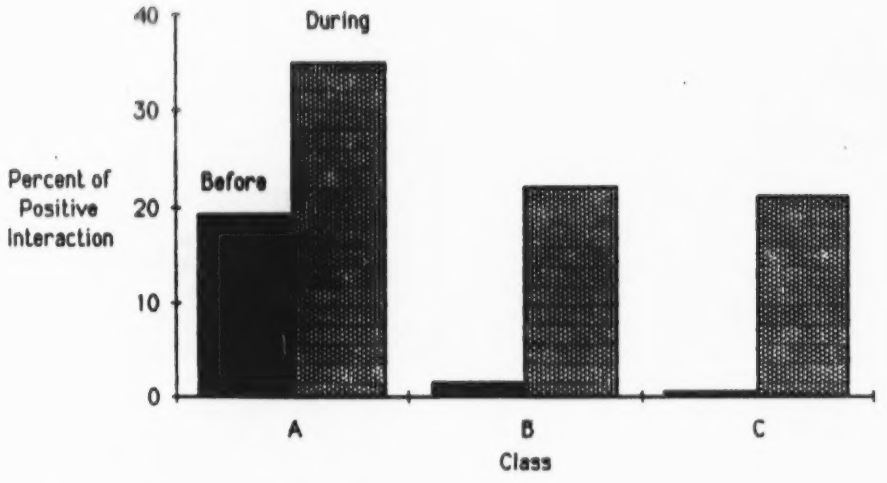


Figure 1. Mean amounts of positive interaction between handicapped tutors and regular class students before and during the treatment.

Increasing Social Acceptance: Behaviorally Disordered Students Tutoring Their Gifted Peers

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Running head: BEHAVIORALLY DISORDERED TUTORS

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Increasing Social Acceptance: Behaviorally Disordered Students Tutoring Their Gifted Peers

Interest in improving student attitudes toward handicapped peers has gained impetus from current trends in mainstreaming. In a review of attitudinal research, Wylie (1976) concluded that contact between handicapped and nonhandicapped students does not necessarily reduce students' negative perceptions of their handicapped peers. Gottlieb (1975) further emphasized that before a handicapped student is mainstreamed into a regular classroom the students must be prepared for such an addition to their class. He also maintains that cognitive information is not enough to ensure attitudinal change.

Various studies have assessed the use of information, activities, literature, role playing, and contact in improving student attitudes toward handicapped peers (Ballard, Gottlieb, Corman & Kaufman, 1977; Salend & Moe, 1983; Lazar, Gensley & Orpet, 1971; Rapier, Adelson, Carey & Croke, 1972). While many of the studies have reported that attitudinal changes result from a diversity of treatments, Gottlieb (1981) has warned that attitudinal change fostered by discussion or information alone may be undermined by a single negative personal experience with a handicapped student. Voeltz (1980), along with Simpson, Parrish, & Cook (1976), have also concluded that positive contact between handicapped and nonhandicapped peers is optimum for increasing the acceptance of handicapped students. Reseachers have determined that such contact is especially important for behaviorally disordered students, who apparently are viewed more negatively by nonhandicapped peers than any other group of handicapped students (Parish, Ohlsen, & Parish, 1978).

But the question remains as to how to foster appropriate contact between behaviorally disordered students and their regular class peers. Several researchers have suggested that a natural method for increasing this positive contact is through

peer tutoring (Argyle,1976; and Harris & Aldridge, 1983). While most tutoring research in special education has involved handicapped students as tutees, or as tutors of other handicapped students, recent attention has been focused on the possibility of having handicapped students tutor their nonhandicapped peers (Osguthorpe, et al., 1984). In these studies, students with a variety of handicapping conditions have tutored their nonhandicapped peers in sign language ("reverse-role tutoring"). Although this research has shown that nonhandicapped students are more apt to spend their free-play time with handicapped students, as a result of the tutoring, attitudinal measures have not been reported.

The primary objective of this study was to determine whether attitudes of nonhandicapped students toward their behaviorally disordered peers could be improved through participation in a reverse-role peer tutoring program. Specifically, a self-contained class of (BD) students were taught sign language and were then given the opportunity to share their skills by tutoring peers from a self-contained gifted class. The following questions were addressed in the study:

1. Will the social distance between BD students and their nonhandicapped peers be reduced through a reverse-role tutoring program?

2. Will BD students function in a socially acceptable way as tutors of gifted students?

Method

Setting and Subjects

The research was conducted in a suburban elementary school which had self-contained programs for both BD and gifted students. Ten students (9 males and 1 female, ages 10-12) from a self-contained BD class acted as tutors in the study. Students were assigned to the BD class on the basis of anecdotal records indicating serious behavioral and/or emotional problems and by recommendation from a special education team comprised of the principal, resource teacher, speech pathologist, psychologist, nurse, and social worker. A total of 30 fourth-grade students from a gifted class participated as sign language tutees. In addition, 27 fifth-graders and 21 fourth-graders who were not involved in the tutoring participated as comparison groups.

Procedures

The BD students were instructed in basic sign language skills for approximately 8 weeks. These students then acted as tutors to the fourth-grade students from the gifted class. The teacher of the BD class arranged the tutoring sessions so that each handicapped student would be responsible for tutoring 3 nonhandicapped tutees. The tutoring was conducted during 15-minute sessions, 3 times per week, with each tutee being instructed once a week. To help the tutors understand what was expected of them as tutors, the BD teacher and the aide each rated the students daily and awarded points for appropriate behavior in areas, such as having materials set up on time and remembering to praise tutees. At the end of each 2-week period a small trophy or medal was awarded to the 2 tutors who had accrued the most points. The BD teacher and aide also monitored the progress of the tutees as they completed each packet of sign language materials. Tutoring sessions continued for a total of 8 weeks.

In order to avoid bias that could be introduced by pretesting, the study was conducted using a posttest only nonequivalent control group design. At the conclusion of the tutoring treatment, student attitude questionnaires were administered to the gifted fourth grade, another fourth grade, and a fifth grade (See Appendix A). A portion of the items on the questionnaire were created specifically for this study, while others were taken from an instrument developed by Cartledge and Frew (1984) designed to measure attitudes toward learning disabled students. Items were selected from this instrument based on two criteria: 1) applicability to the BD population, and 2) the quality of the item as reported in Cartledge and Frew's (1984) original study in which 450 regular class students used the instrument. The questionnaire asked students to rate a given class on fifteen adjectives (e.g., "happy", "obedient", "rebellious") by circling one of the following choices: "describes the class," "does not describe the class," or "don't know." An additional nine questions (e.g., "Would you like them to be in your class?") were presented which students answered by marking "yes," "no," or "don't know."

Taped interviews to assess attitudes toward participation in the program were conducted on the school site with the gifted and BD students, their teachers, and the BD aide. In the classroom interviews with the students, a graduate assistant asked questions such as, "What did you like or dislike about sign language tutoring?" Both classes were also prompted to discuss their feelings toward the other group of students. The teachers and the aide were asked to describe positive and negative aspects of implementing the program, the effect that they believed it had on their students, and any improvements which they felt should be made.

Data Analyses

To analyze the results of the attitude questionnaire, student responses were given the following values: positive responses toward the class being rated (+1), don't

know (0), and negative responses toward the class being rated (-1). Total scores were computed for each student and for each class. In addition, the percentage of responses which were positive, uncommitted, and negative towards the class being evaluated were compared. Analyses of variance were then calculated comparing the three classes' mean response toward the BD students in order to determine whether tutees rated the BD students differently than did those who had not been tutored. The Student-Newman-Keuls procedure (SNK) was then used to compare individual means from the three classes. Finally, in order to eliminate the effects of the "don't know" category, a second analysis of variance was calculated on the mean number of negative responses made by each class.

Results and Discussion

The means, standard deviations, and percentages of responses for each group are presented in Table 1

Insert Table 1 about here

Analysis of variance on the three classes' mean responses towards the BD class showed a significant difference between classes, $F(2,71) = 9.238$, $p<.001$. The Student-Newman-Keuls procedure (SNK) revealed that the gifted class of tutees rated the BD class significantly higher than either class of non-tutees, $p<.05$.

As can be seen in the table, the means alone are not adequately descriptive of one group's attitude toward another. Compare, for example, the mean ratings of Ms. T's class toward the BD class with the gifted class's ratings toward the fifth grade class. While the mean rating of the gifted class (1.21) is approximately equal to the mean of Ms. T's class (.92), the breakdown among categories of responses is quite different. In

other words, although the means are similar, it would appear in this case that Ms. T's class has a more negative attitude toward the BD class (33%) than the gifted class has toward the fifth grade class (20%). Further, it can be seen that the gifted class was more than twice as likely to respond with "don't know" (55%), than was Ms. T's class (25%).

The "don't know" category, then, takes on special importance in understanding the analyses, because it signifies when students were unwilling to commit themselves to either a positive or negative response. It is interesting to note that if the "don't know" responses are compared across all classes, a revealing pattern emerges. When students are asked to give their perceptions of the BD class, they are approximately equally likely to respond with "don't know." However, when rating classes other than the BD class, the gifted students are consistently more likely to respond with "don't know." Closer analysis of the individual questionnaires showed that the "don't know" responses usually indicated that the rater was less familiar with the class being rated, rather than confused regarding the meaning of the item. In other words, the gifted class appeared to be less familiar with the fifth grade and fourth grade classes than were the other classes who completed the ratings.

For this reason, analyzing only group means does not give a total picture of the results. More revealing, perhaps, is the number of negative responses, indicating the amount of aversion students felt toward the group being rated. For example, comparing the negative responses of the three classes toward the BD class, the analysis of variance showed the groups to have significantly different attitudes, $F(2, 71) = 8.199$, $p<.001$. More specifically, Ms. W's and Ms. T's classes were at least twice as likely as the gifted class to perceive the BD students negatively. The SNK showed that both groups of non-tutees were higher in negative responses toward the BD class than were the tutees, $p<.05$. Thus, the lower means given to the BD class by non-tutees were not due to a high number of uncommitted responses, rather, the

non-tutee responded negatively toward their BD peers more frequently than did those who had been tutored.

Interview Data

Interviews with the teachers, the aide, and the tutees provided evidence that the BD students were able to maintain socially acceptable behavior during tutoring sessions. There were no instances when any of the students were removed from tutoring; in fact, the BD students were motivated to complete their school assignments so that they would be allowed to tutor. The aide reported that " they [the BD students] tried to do every single thing." The tutees also had positive comments about being tutored by the BD students and expressed interest in future involvement. One of the few complaints voiced was that the tutors praised excessively.

Teachers agreed that they had seen benefits from the tutoring and would like to see it continued. The teacher of the gifted students did not see any particular advantages for her students prior to the study, but she would now recommend the program to another teacher: "I think they've gained a respect for the kids in the BD class. They knew something that my kids didn't so I think they've gotten a lot of respect for that. It shows in the way that they talk about the kids: 'They must be really smart to know this!' It's like an attitude of 'it's really neat to go because those kids really have something to teach us.'"

Conclusions

The results of the study indicate that reverse-role tutoring has a positive effect on tutees' attitudes toward their tutor. While previous research has shown that tutoring can increase the amount of social integration experienced by handicapped tutors (Osguthorpe, et al., 1984), this study has shown that attitudes of tutees are also improved. This is a critical finding in view of the recent results reported by Ray (1985)

which demonstrated that even when observations show that handicapped students are "accepted" by their peers, the peers may still harbor negative attitudes toward the handicapped students. The data reported by Ray (1985), as well as the results of the present study, indicate that attitudinal measures are of critical importance in research which attempts to foster integration of behaviorally disordered students with regular class students.

Further research should be conducted to investigate several issues raised by this study. The question arises as to how long a tutor and tutee should be allowed to work together. How many tutoring sessions are required before a tutee begins to think more positively about the BD tutor? From the current study, it would appear that tutees, simply by being in the BD classroom and becoming acquainted with one tutor, begin to feel more positively toward the entire group of BD students--not just toward the tutor. But the question of rotating tutors and tutees still seems to be a viable question. Should a regular class student, for example, be tutored by several different handicapped students for a short time, or is it more effective to allow the students to develop a closer relationship with one tutor?

Additionally, since many BD students in a self-contained setting are working their way toward full participation in a regular classroom, it would be important to investigate the effects of pre-planning tutor-tutee pairings based on prospective class placements. In this way, the BD student could become closely acquainted with several of the students in the targeted regular class prior to being mainstreamed. The experience would allow the regular class tutees to see the tutor in a competent role, perhaps paving the way for the BD student to assume a more equal social position, when finally entering the regular classroom. There is little question that adjustment to the regular classroom could be made easier if the regular class students already possessed positive attitudes toward the BD student. And the results of the present study indicate that many of these students would not prefer, in the words of a questionnaire item, to

"have one the (BD) students in (their) class." It is precisely for this reason that continued effort should be focused on strategies for improving attitudes toward students with behavioral disorders.

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Table 1

Comparison of Means, Standard Deviations, and Response Percentages from the Student Attitude Questionnaire

	Class Being Evaluated		
Respondents	5th-Grade Class	BD Class (Tutors)	4th-Grade Class
Ms. T's 5th-Grade Class n = 27	M 12.84 SD 8.83 Negative 15% Don't know 14% Positive 69%	M .92 SD 6.87 Negative 33% Don't know 25% Positive 38%	
Ms. W's 4th-Grade Class n = 21		M 4.65 SD 8.68 Negative 26% Don't know 28% Positive 45%	M 16.09 SD 6.45 Negative 10% Don't know 12% Positive 77%
4th-Grade Gifted Class n = 29 (Tutees)	M 1.21 SD 7.58 Negative 20% Don't know 55% Positive 25%	M 10.83 SD 9.71 Negative 13% Don't know 29% Positive 58%	M 7.82 SD 8.07 Negative 14% Don't know 39% Positive 46%

Note. Percentages may not add up to 100% due to non-responses.

Appendix A

STUDENT ATTITUDES QUESTIONNAIRE

Class_____ Date_____

1) How well do you feel you know the students in _____ class?
a) very well b) quite well c) a little bit d) not very well at all

2) Can you name any students in _____ class? Write each student's full name if you can, otherwise just write their first name.

_____ _____ _____
_____ _____ _____
_____ _____ _____

3) Of the students you've named above, which ones would you say you know best

_____ _____ _____

4) Think of the students in _____ class as a whole. Circle one number for each adjective in the following list.

	Describes the class	Does not describe the class	Don't know
Happy	1	2	3
Obedient	1	2	3
Rough	1	2	3
Friendly	1	2	3
Nice	1	2	3
Intelligent	1	2	3
Likes school	1	2	3
Cooperative	1	2	3
Shy	1	2	3
Mean	1	2	3
Confident	1	2	3
Rebellious	1	2	3
Responsible	1	2	3
Likable	1	2	3
Hard to get along with	1	2	3

5) Again, think of the students in _____ class as a group and answer each of the following questions:

	Yes	No	Don't know
Do you think you would like talking to them?	___	___	___
Do you think they would be unkind to you?	___	___	___
Do you think they would be good in sports?	___	___	___
Do you think they would talk out and bother other people in class?	___	___	___
Do you have friends like the students in _____ class?	___	___	___
Do you think they would participate in group games and class activities?	___	___	___
Would you like them to be in your class?	___	___	___
Do you think they say mean things to people?	___	___	___
Would you ask them to play a game with you and your friends?	___	___	___

Learning Disabled Students Tutoring Nonhandicapped Peers: Establishing Guidelines for Reverse-Role Tutoring

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Running head: REVERSE-ROLE TUTORING GUIDELINES

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Learning Disabled Students Tutoring Nonhandicapped Peers: Establishing Guidelines for Reverse-Role Tutoring

This study was initiated to determine whether a reverse-role tutoring program could be executed successfully within a 10-week period. Previous research with handicapped students tutoring nonhandicapped peers in sign language allowed approximately 8 weeks for the students to learn sign language before beginning to tutor their peers for an additional 10 to 12 weeks. Thus, a minimum of 4 or 5 months was the total time required to implement the program. The intent of this research was to discover whether the same program might be executed within a shorter time period while maintaining the desired results.

Method

Subjects and Setting

Subjects for the tutoring program were 11 students in a self-contained learning disabled (LD) class and 11 students from a split fifth-and sixth-grade class. All students were between 10 and 12 years of age. The elementary school had an enrollment of 385 students was located in a suburban area of a major city. The school was in a large school district enrolling approximately 39,000 elementary students. The district had a policy of placing learning disabled students in self-contained classes in only the rarest instances, resulting in only one self-contained LD class at this age level in the entire district. All other LD students received instruction through a resource teacher. This method of placement is critical because it indicates the severety of learning problems possessed by the target population for this study.

Procedures

The study was conducted during the last three months of the school year. Although a relatively short time period remained before the conclusion of the school

year, the teacher of the LD class wanted the opportunity for her students to participate in a tutoring program. Therefore, the decision was made to implement an intensive version of the sign language tutoring program in the LD class during the remaining three months. To assist the study, an aide skilled in sign language was hired on a part-time basis to teach the students sign language, to supervise the tutoring, and to observe playground interaction. A graduate student involved in the previous tutoring research checked regularly with the aide to provide suggestions and to monitor program progress.

Materials were prepared for the sign language aide which consisted of sets of vocabulary words on flip charts. Each card presented a picture of the word, the printed word, and the signed representation of the word. The reverse side of the card, seen by the tutee, presented only the printed word. In addition, several games were provided which encouraged the students to practice previously learned signs. In order to provide the LD students with adequate signing skills before they began tutoring their peers, the sign language aide instructed them 4 afternoons per week for a two-week period. During this time she divided the class into two signing groups and spent approximately 45 minutes per day working with each group. The aide also noted the LD students' interaction with nonhandicapped peers during afternoon recesses prior to and during the treatment period.

While her students were learning sign language, the teacher of the LD class approached the teacher of a split fifth-and sixth-grade class whose room was located directly across the hall from the LD class. She briefly explained the intent of the program and asked whether he would be willing to let some of his students participate. He agreed and requested volunteers from his class to act as sign language tutees.

At the end of the second week of instruction of the LD class, it was the aid's judgement that 7 of the 11 students were ready to begin tutoring the following week. The other 4 students began tutoring approximately two weeks later. The teacher of the LD students preferred to divide her students into two groups so that she could instruct one group while the other group signed. A vacant room adjacent to the classroom was

not available so the teacher of the LD class designated one table in her own room as the place where sign language tutoring would occur. This meant that the sign language tutoring would take place on one side of a room divider while group language instruction occurred on the other side. Later, the teacher of the LD class rearranged the schedule so that math instruction was substituted for language instuction in that time block. During the tutoring, five or six LD students sat in close proximity to one another on one side of the table while instructing the same number of peers on the opposite side of the small table. To coordinate with class curriculum and to intensify the treatment, the teacher and the aide planned each tutoring session to last 30 minutes per session, 4 afternoons per week. The aide also continued to instruct each group of LD students in sign language for an additional 30 minutes each tutoring day.

When the tutees had gained minimal vocabulary signing skills, games were introduced to add variety to the tutoring sessions. Sometimes the students played a signed form of Bingo while at other times they were divided into teams for signed vocabulary competition. To provide extra incentive for the tutors, they were shown a small trophy which was to be given to the best tutor at the conclusion of the year. The aide awarded points daily to each student dependent on his or her performance in various areas such as remembering to praise tutees and demonstrating clear signing skills.

A signing bee at the end of the year was the culminating activity for the students. Both the tutors and the tutees competed for two trophies: one was awarded to the winner from the LD tutors; the other was awarded to the winner from the nonhandicapped tutees.

At the conclusion of the study separate interviews were conducted with the students and teachers from each group. Interviews focused on obtaining participants' perceptions about positive and negative aspects of the program.

Results and Discussion

Recess playground observations made by the aide before and during treatment showed that daily social interaction between the LD students and their nonhandicapped peers was already occurring prior to tutoring. The students continued to engage in jumprope and softball activities with one another during the course of the study.

Despite the tutees' expressed willingness to participate in sign language tutoring in the future, they voiced several criticisms about the program. One of the tutees stated, "One thing I didn't like was when the tutors told you something wrong" and another added, "Yeah, then in the signing practices you got it wrong because they told you wrong." While tutees in previous studies made overwhelmingly positive comments about the competence of their handicapped tutors, the students in this class were inclined to state that their tutors often taught them the signs incorrectly or were inattentive teachers. Observations during tutoring by the graduate student also confirmed that students were more disruptive at this site than in other past or current research settings. The aide had a particularly difficult time maintaining order in one of the two tutoring groups.

Several factors in the study which were not conducive to effective tutoring may account for the tutors' poor performance. Because the tutors had only been exposed to sign language for approximately two weeks before they were expected to begin tutoring, their grasp of sign languge may not have been advanced enough to allow them to instruct their peers correctly and with confidence. The fact that the tutoring sessions were 30 minutes long and occurred 4 days per week (rather than 15-minutes sessions, 3 days per week, as implemented in previous studies) possibly made the tutoring sessions too long and too frequent for the students to maintain a high level of interest over an extended period of time. In addition, both the tutors and the tutees were seated so closely to one another during tutoring sessions that it was difficult for them to concentrate on their partners. A tutoring arrangement which allowed tutors to

sit at separate desks while instructing their peers has proven more conducive to order and on-task behavior. Finally, the aide who was chosen to assist in the program because of her signing skills was not successful at establishing rapport with several of the students. Although she had advanced signing skills and previous experience as a substitute teacher, she was less adept at generating enthusiasm and cooperation among the stuents. A key factor in the success of previous research was the aid's ability to supervise the tutoring so that it was enjoyable as well as instructive for participants.

The major complaint voiced by both teachers was the difficulty of scheduling tutoring so that it would not conflict with other class activities. In this instance the tutoring was inconvenient for the teachers to incorporate at the end of the year when the classes were accustomed to their fixed schedules. While the teacher of the LD class still felt that the benefits of the tutoring outweighed the difficulties, the other classroom teacher had reservations about his students' involvement. He felt that his students enjoyed participating and that achievements in non-academic areas were important, but he had not foreseen the complication of attempting math instruction for two grades while some students left for music instruction and others were rotated in and out for sign language tutoring. He believed that having a split fifth- and sixth-grade made the situation more difficult because he was trying to deal with students on diverse academic levels. An additional problem was created for him because the students returning from signing had difficulty returning to their classroom work. He suggested that a better time for tutoring would have been before recess or before another subject, rather than during math instruction which required students to return and finish partially completed work. A comparison of this study with previous research on reverse-role tutoring suggests guidelines which educators should consider prior to establishing a tutoring program:

1. Teachers of the handicapped and nonhandicapped students must agree on a convenient time for tutoring to occur which will not be disruptive of their regular curriculum.
2. Individuals responsible for supervising the tutoring must be able to capitalize on student interest in sign language. Interpersonal skill in working with students is more important than signing ability.
3. At least 4 weeks exposure to sign language is optimum for learning disabled students to gain adequate signing skills which will allow them to tutor confidently.
4. Tutoring sessions lasting 15-20 minutes, occurring 3 to 4 times weekly over a 3 month period are more conducive for maintaining student interest than are sessions of longer duration, administered more frequently over a shorter period.
5. Adequate space should be allowed for each tutor to instructhis or her tutee without interference from other students. Seating one tutor and one tutee at a student's desk is more effective than grouping students around a single table.

Deaf Adolescents Tutoring Hearing Peers in Sign Language: A Pilot Study

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Running head: DEAF ADOLESCENTS TUTORING

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Deaf Adolescents Tutoring Hearing Peers in Sign Language: A Pilot Study

Previous research in reverse-role tutoring featuring handicapped students tutoring nonhandicapped peers in sign language has been limited to the elementary school setting. In an effort to broaden the scope of this research to include a wider population in divergent settings, a study was undertaken to assess the feasibility of implementing reverse-role tutoring with deaf adolescents tutoring their hearing peers in sign language. The pilot study was unique from past research in that the students involved were deaf and already proficient in sign language and that a secondary school was the setting for the study. Three basic questions were addressed in the research:

1. Will the social integration of deaf students mainstreamed in a hearing school be enhanced if more hearing students are able to communicate in sign language?
2. Will deaf adolescents function successfully as sign language tutors to their hearing peers?
3. Can a reverse-role tutoring program be implemented in a junior high school setting?

Method

Setting and Subjects

The setting for the study was a junior high school located in the suburb of a major city. Enrollment was approximately 1100 students. Within the school, a small self-contained unit for the hearing impaired had been established which attempted

part-time mainstreaming of deaf students into regular classes with the aid of an interpreter.

Six hearing impaired students (12-14 years of age, 3 male, 3 female) were originally enrolled in the deaf unit; halfway through the year, one female student transferred to a residential school for the deaf in a nearby city. Five students continued to participate in the tutoring program. Expressive English skills of the students varied: one student had become postlingually deaf, had retained fairly comprehensible speech skills, and was currently mainstreamed for English; the other four students were prelingually deaf, had difficulty with English grammer, and used their voices occasionally although they could not be understood easily by individuals unnaccustomed to their specific speech patterns. The teacher of the unit was also deaf. Total communication involving both signed English and voiced English was the method of communication for most classroom instruction; however, the teacher also used American Sign Language to communicate with the students when necessary. Unlike the majority of hearing students, the deaf students did not live in close proximity to the school.

Procedures

To determine the general level of social integration which the deaf students had with their hearing peers, interviews and observations were conducted prior to any intervention. The teacher and the interpreter who were currently working with the deaf students were asked to describe the type of social interaction which they had seen between the deaf and hearing students. Phone interviews with 4 of the parents of the deaf students assessed each parent's attitudes about their child's acceptance at school (See Appendix A). The survey consisted of 13 questions: 8 of the questions were scaled so that the parent could respond with a numerical answer between 1 (a strongly negative response to the question) and 9 (a highly positive response to the question). Questions focused on subjects such as, "How accepting of your child are the hearing students in the school?" and "How willing are the hearing students to try to communicate with your child if there is no interpreter available?" They were also

asked to elaborate on their responses. The final 5 questions were open-ended inquiries to gain information about the family's use of sign language at home, their proximity to the school, and their child's prior experience with teaching sign language.

Based on information from the assessment of social interaction, the reseachers decided to establish reverse-role tutoring which would allow the deaf students to tutor their hearing peers in sign language. Materials consisting of printed cards of vocabulary words relevant to the school setting were prepared for the tutors. Later, the tutors were encouraged to add vocabulary cards which they wanted the tutees to learn. An empty room in the school was also located where tutoring could take place. Before the tutoring could be implemented, however, several obstacles had to be considered and overcome.

First, the school schedule divided each day into 50-minute periods and the tutoring could not interfere with student involvement in their regular curriculum or allow them to miss large blocks of class time. Although sign language instruction needed to occur regularly in order for the tutees to gain a useful working vocabulary, it was not feasible to ask teachers to release their students on a daily basis or for entire class periods. It was decided that the maximum amount of time that teachers would be willing to excuse their students from regular classes would be 15 minutes, twice weekly.

Second, an aide had to be located who had sign languge skills and who could be present to supervise the tutoring. The interpreter who was presently employed for the students was asked if she would be willing to become involved in the tutoring program. She indicated that her schedule would allow her to participate during fourth period and on alternating days during first period.

Third, to have the tutoring be effective, the students who were chosen as tutees needed to be peers whom the deaf students had opportunity to interact with outside of tutoring time. Based on the hours that the interpreter would be available, the teacher of the deaf students suggested that some of the students could be released from general reading during first period, and that others might be released from physical education during fourth period. The boy's physical education coach supported this

arrangement, but the girls' physical education instructors refused to release any students during class time. Finally, it was arranged so that three students could tutor during first period and three could tutor during fourth. To help the deaf students feel comfortable in their roles as tutors and to maximize the possibility that the students would use sign language together, each of the deaf students submitted the name of a hearing peer that they wished to teach. These names were then submitted to the school principal who asked the teachers if the students might be excused from classes to attend the sign language tutoring sessions. The majority of teachers agreed to have their students participate; however, two of the deaf students were forced to choose alternate tutees because the ones that they originally chose either did not want to participate or were not excused by their teachers. In addition to teacher permission, parental permission was also received for each deaf and hearing student.

Scheduling the tutoring and receiving permission took researchers approximately 6 weeks and was completed shortly before Christmas vacation. This allowed the tutoring to occur only twice before the school closed for Christmas break and then to resume in January for two weeks before the end of the term. During that time, SAT testing, as well as student and interpreter absences, interrupted tutoring sessions.

Obstacles to tutoring increased at the beginning of the new term. The interpreter transferred to another school and several of the hearing students began classes from which they could not be excused. For one month the tutoring was discontinued until the new interpreter arranged to participate in the program so that tutoring could resume. The new interpreter was familiar with some of the students in the school and accepted the responsibility of finding new tutees, coordinating schedules, obtaining permission, and implementing the tutoring. An additional month passed before tutoring was again underway. It was decided that implementation would be smoother if all students tutored together twice weekly during the last 15 minutes of first period.

Conflicts with scheduled assemblies, difficulties with interpreter absences, tutee absences, or tutee involvement in other activities continued to interrupt tutoring. In spite of that, the interpreter recorded that both the hearing and deaf students appeared

to be enjoying the program and that the tutees were making progress with their signing vocabularies. Tutoring continued irregularly for two more months.

At the conclusion of tutoring, the interpreter interviewed 4 of the deaf and 2 of the hearing students to assess their feelings about participation in sign language tutoring. A graduate student also interviewed the teacher of the deaf students to obtain her views about the tutoring program.

Results and Discussion

The interviews and observations conducted prior to treatment pointed out that the hearing impaired students were not adequately socially mainstreamed in the school setting. The interpreter who had been providing interpreting services for several months prior to the study indicated that she felt that the deaf students were "accepted, but not exactly integrated" into the hearing school system. She knew of only three hearing students attending the school who knew sign language. The teacher of the deaf unit also expressed her view that the deaf students were not able to communicate comfortably with most of the hearing students who did not sign.

The graduate student's observations of social interaction between the deaf and the hearing students were made in three classes (Girl's Physical Education, Art, and Math). Excerpts from observational notes taken in the various classes follow:

> (Girl's P.E.) There seem to be close to 100 girls in the gym now. Because of conflicting class schedules, there is no interpreter available for this class, so Debbie and Karen are on their own. The teacher strolls among the seated girls on the floor as she explains the rules for a game which they will be playing. There is no way that the deaf students can possibly lip-read anything that she is saying. As the girls rise to begin playing, both deaf students look at me questioningly. I shrug, explain in sign language the little that I heard, and the game begins. Neither of the deaf girls ever completely catch the rules of the game, but neither do some of the hearing students. Both deaf girls stand near several other girls who seem to accept them. There is seldom much communciation between the

hearing and the deaf except for smiles--no signing.

(Art) The interpreter is late for class and the teacher tries to question Grant on how his projects are progressing. He cannot understand her and looks back at me for an explanation of what she is saying. The teacher also looks uncomfortable. I move to the front of the room at act as a substitute interpreter for a few moments. She asks Grant if he has completed certain projects; he shakes his head and replies that he left them at home. She asks about other projects and his reply is the same. Grant becomes embarassed about having to stand at the front of the room and answer questions even though most of the other students are busy with their own projects and are not paying attention to the conversation. Finally, Debbie [also a deaf student] helps him to start on another project. She is confident about approaching the teacher and making herself understood even without the aid of an interpreter. Grant is unwilling to try--he seems very shy. During the hour, neither Grant nor Debbie have any interaction with the hearing students. They sit on the end of one table and work together.

(Math) Wanda and Richard sit at the two front desks on the right side of the room. The interpreter alternately sits between them, helping them to correct their papers as the teacher reads the answers, and in front of them, as the teacher lectures and uses the chalkboard. The teacher calls on students to give their answers to large multiplication problems. She calls on Wanda, who signs and voices her answer while the interpreter reverses. Later, the teacher calls on Richard. He answers without the aid of the interpreter. There is no interaction between the deaf students and the other class members, but the two of them talk occasionally--teasing one another. The teacher now moves among class members answering questions while the students work on their next assignment, As she stops and talks briefly with Richard and Wanda, she seems comfortable talking with the deaf students and looks directly at

them, rather than at the interpreter, while conversing.

The observations indicate that the interaction between the deaf and hearing students was limited. No instances were noted in which any of the hearing students made an attempt to communicate with their deaf peers in sign language.

One particular theme that arose during the parental interviews was that the parents were very tentative when asserting opinions about their child's acceptance at school. Statements such as "I really have no idea at all" or "He doesn't say anything about it" were common. Means calculated from parental responses to selected questions on the survey follow. Since parents were asked to choose a numerical response between 1 and 9, lower mean scores represent parents' negative responses while higher scores show more positive assertions in answer to the questions. Parents felt that the teachers in the school were quite accepting of their child (M=7.0, SD=1.4). Likewise, they saw the other deaf students as accepting (M=7.0, SD=0.0), but saw the hearing students as less accepting of their deaf child (M=5.3, SD=0.6). They also believed that hearing students were largely unwilling to try to communicate with a deaf peer without the aid of an interpreter (M=3.8, SD=2.0). The relatively low mean corresponding to parental perceptions of the hearing students' willingness to attempt communication with deaf peers is congruent with information obtained from the interviews and observations. Parents were positive in asserting that their child would enjoy school more if a greater number of hearing students knew sign language (M=8.5, SD=1.0). Some parents pointed out the difficulty of having hearing students in the school learn sign language without an organized program. One mother stated, "One or two people from a whole classroom may sign--unless they have outside motivation like a program to get them to sign--they don't." Another said, "I can only go by what I see in the neighborhood and at church. At first Richard makes a good impression--then later the kids realize how much work it is to communicate." All of the parents responded that they would like to see some type of program set up at school which encouraged more of the hearing students to sign.

While the interviews and observational data reported consistently suggest the desirability of having more hearing students able to communicate with deaf peers in

sign language, the difficulties previously described portray the challenges faced by researchers or educators who strive to make implementation possible in a junior high school setting. In this study an attempt was made to set up a program which would allow the deaf students to instruct their hearing peers in a one-on-one situation. While interpreter and tutee comments confirmed that the deaf students were able to act successfully as tutors to their hearing peers, and although the program involved only a small number of students, it became apparent to the researchers that class sceduling obstacles inherent in a junior high school setting hindered the progress of the tutees.

Interviews conducted with the tutors and tutees at the conclusion of the program found that the tutoring sessions were too short or too infrequent to allow the tutees to develop signing skills that would enhance future communication. Despite that drawback, both tutors and tutees expressed interest in having further opportunity to participate in some type of sign language instruction. The teacher of the deaf students and the interpreter also felt that the time provided was inadequate to provide the tutees with basic communication skills. The teacher of the deaf students suggested that she would ideally like to see sign language incorporated into the school curriculum as an optional language class like Spanish or French.

It is clear that deaf students' full participation in school is limited by the number of individuals with whom they can comfortably communicate. Deaf students, such as those described here, are willing to share their signing skills and have the capability of instructing hearing peers to make communication possible. It is apparent, however, that for a sign language tutoring program to succeed, the school staff must be aware of the deaf students' need to interact with hearing peers in a common language and be committed to finding time for the students to develop such communication skills.

Appendix A

Parental Interviews

Name: _____ Date: _____

	Not Very
1. How enthusiastic is your child about school?	1 2 3 4 5 6 7 8 9
2. How accepting of your child are the other deaf students in the school?	1 2 3 4 5 6 7 8 9
3. How accepting of your child are the hearing students in the school?	1 2 3 4 5 6 7 8 9
4.. How accepting of your child are the teachers in the school?	1 2 3 4 5 6 7 8 9
5. How interested is your child in becoming involved in exctra-curriculur school activities?	1 2 3 4 5 6 7 8 9
6. How willing are the hearing students to try to communicate with your child if there is no interpreter available?	1 2 3 4 5 6 7 8 9
7. Would it make a difference in how your child felt about school if more hearing students knew sign language? In what way?	1 2 3 4 5 6 7 8 9
8. How interested would your child be in teaching another student sign language?	1 2 3 4 5 6 7 8 9

9. Has your child tried to teach a friend sign language before?

10. Approximately how many hearing friends would you say that your child has at school? How many of them sign?

11. Approximately how many hearing friends would you say that your child has in the area where you live? How many of them sign?

12. How far from the school do you live? Is your child bussed?

13. Do you use sign language to communicate at home?

Behaviorally Disordered Students as Tutors:

Effects on Social Behaviors

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Running head: BD TUTORS

Abstract

Twenty-four behaviorally disordered (BD) students attending self-contained classes were randomly assigned to tutor and control groups. Tutoring condition students tutored younger, lower functioning students in language and social play areas during one of four five-week tutoring sessions. A variety of dependent measures were employed during the course of the intervention, including absences, disciplinary referrals, change in targeted behaviors, behavior rating scales, continuous records, achievement test scores, and attitudes toward school. Although anecdotal reports strongly favored tutoring, all objective measures failed to indicate behavior change due to tutoring. Congruence with previous research and indications for special education teachers are given.

Behaviorally Disordered Students as Tutors:
Effects on Social Behavior

Many researchers have maintained that tutoring is an activity which benefits both tutor and tutee in various ways (Ehly & Larsen, 1980; Jenkins and Jenkins, 1981; Pierce, Stahlbrand & Armstrong, 1984). The tutee is said to benefit from individualized instruction and the attention provided by a peer who is often somewhat older than him/herself; while the tutor is said to benefit both academically and socially from the experience of being the tutor. And, in fact, a body of research has emerged recently which tends to support such claims. In a recent meta-analysis of tutoring literature, Cohen, Kulik, & Kulik (1982) concluded that tutoring generally results in a net positive gain on the part of both tutors and tutees, particularly with respect to academic achievement measures and attitudes toward the content being tutored. It was further determined that more structured tutoring interventions produced greater gains than less structured tutoring interventions, and that shorter (approximately one month) interventions produced the greatest effects. Although "self-esteem" gains are commonly thought to accrue to tutors (Ehly & Larsen, 1980; Jenkins & Jenkins, 1981; Pierce Stahlbrand & Armstrong, 1984;), in fact, the literature is replete with investigations which failed to produce significant gains in "self-esteem" as measured by published inventories (Franca, 1983; Jones, 1982; Kreutzer, 1973; Lazerson, 1980; Olsen, 1969; Roddy, 1981: Sharpley, Irvine, & Sharpley, 1983). Cohen et al. (1982) concluded, "the literature contains anecdotal reports of dramatic changes in self-concept brought about by tutoring programs, but quantitative studies do not support these results. Dramatic changes in self-esteem appear to be atypical" (p. 246).

Jenkins and Jenkins (1981), however, cite literature which suggests that tutoring has been beneficial in a number of areas, in addition to attitudes and self-esteem, including interracial integration, level of aspiration, personal confidence, and social adjustment. Jenkins and Jenkins add, however, that many of these studies were not methodologically adequate, and that caution must be taken against

overgeneralization. In addition, it is not difficult to locate studies which failed to document such benefits (e.g., Nevi, 1982; Stainback & Stainback, 1972).

Scruggs, Mastropieri, and Richter (in press) recently reviewed literature which concerned itself with the use of behaviorally disordered students in tutoring interventions. Behaviorally disordered (BD) students have a special place in tutoring interventions because of their generally lower levels of academic functioning (Mastropieri, Jenkins, & Scruggs, in press), but more importantly, because they typically exhibit the type of deficits in social functioning, such as self-esteem, social adjustment, and attitudes toward school that tutoring interventions are said to impact positively upon (Kauffman, 1984; Quay, 1979). After reviewing all available literature to date on tutoring interventions with BD students, Scruggs et al. (in press) concluded that such tutoring: (a) increases academic functioning of the tutee, (b) increases academic functioning of the tutor if the materials provide for fluency building in an appropriate academic area, (c) can improve social relations of the tutoring pair, and (d) create more positive attitudes toward the content being tutored. Finally, general social functioning, including self-esteem, did not appear to improve as a result of tutoring (cf. Cohen, Kulik & Kulik, 1982). Scruggs et al. concluded that further research is necessary to document specific social benefits to tutors.

Although the overall support for general social benefits for BD tutors is weak, there is, nonetheless, evidence that tutoring can improve social behavior of BD students. Maher (1982) randomly assigned BD adolescents to tutoring or control conditions. In the tutoring condition, students acted as cross-age tutors to younger, educable mentally retarded students. Maher concluded that students employed as cross-age tutors (a) received higher grades in social science and language arts classes. (b) were absent from school less often, and (c) had significantly fewer disciplinary referrals than either of the other two groups. These findings are strongly encouraging, for they seem to impact on the very areas in which BD students need improvement. However, the small sample size per group (N=6), the use of grades as a measure of academic achievement, and the fact that no other similar studies have

reported such positive results indicate that replication and extention of this study is necessary, and, in fact, is the purpose of the present investigation.

Osguthorpe and Scruggs (1985) have called for the use of multiple dependent measures in evaluating tutoring interventions, to insure that benefits which may have been realized are not overlooked by researchers. And since the exact nature of social benefits to BD tutors was difficult to predict from previous literature, a large number of pre and post measures were taken of absenteeism, disciplinary referrals, and academic achievement. In addition, attitudes toward school, daily observation of target behaviors, behavior rating scales, external pre/post behavior evaluations, positive tutor/tutee interaction, and tutor interviews were evaluated. In addition, each tutoring session was kept reasonably short (5 weeks), as Cohen et al. (1982) had determined that shorter tutoring sessions had produced the largest effect sizes. It was hoped, by these means, to be able to specify precisely any benefits which should accrue to the tutors.

Method

Subjects

Twenty-six students participated in this study; three were tutees, twelve were tutors, and eleven (one of the original twelve moved during the study) were control subjects. The three tutees (two female, one male) were identified as severely multiply handicapped by school district standards, and their target behaviors included: paying attention (i.e., eye contact, taking turns, and following directions), providing correct responses and appropriate social game playing skills. The 23 tutors and control students were identified as behaviorally disordered according to school district standards as PL 94-142 guidelines and were attending self-contained classrooms for children with behavior disorders. Target behaviors included: making positive comments, not fighting (i.e., hitting, kicking), on-task, using an appropriate voice, and following directions. Twelve of the 23 tutors and controls were 5th graders, eight were 4th graders, and three were 3rd graders. Twelve students were initially assigned to either the control or tutoring condition. Mean Wechsler Intelligence Scale for

Children-Revised IQ score of the experimental group was 90.63 (SD=8.8); and 90.44 (SD=9.46) for the control group.

Procedure

Students were assigned at random to experimental and control conditions. Experimental students were assigned to 20-minute tutoring sessions for periods of 5 weeks, 4 day per week. Three tutors and three controls were employed for each 5-week tutoring session, so that the entire intervention took place over a period of 20 academic weeks. Tutoring pairs were supervised daily by a classroom aide, who delivered feedback, modeling and prompting on appropriate tutoring behaviors which included consequation of appropriate target behaviors, pacing, and use of positive verbal feedback. During each 5-week session, 2 students used DISTAR Language materials (Engelmann & Osborn, 1976) to teach language skills, while one student modeled and reinforced social behaviors relevant to cooperative play, including taking turns, attending, playing by rules, and positive interaction, using a variety of different games. Tutors received positive teacher feedback on their tutoring on a daily basis in both tutoring and classroom settings.

Dependent measures. In the present investigation, a wide variety of dependent measures was employed in order to minimize the chance that any tangible effect would not be overlooked. The dependent measures included: Attendance records of the period immediately prior to and during each tutoring session; number of disciplinary actions taken by the teacher, both prior to and simultaneous to tutoring; and Devereaux Behavior Rating Scales (DBRS), completed immediately prior to and immediately after the intervention by classroom teachers. In addition, all students completed the Attitude Toward School survey (McDaniel, undated) immediately before and after the intervention. The classroom aide, during each tutoring session, recorded number of positive responses by the tutee, and number of positive responses provided by the tutor. In addition, teachers were asked, prior to assignment to tutoring or control conditions, to list a target behavior exhibited by each student for which a tutoring

intervention may impact positively. Theses target behaviors, which included such behaviors as kicking, fighting, and name calling, were monitored on a daily basis, for 20-minute periods during which the behavior was likely to occur, for both experimental and control students. Also, a trained outside observer, unaware of experimental condition, observed the six experimental and control students, in two settings. for 30 minutes each setting, both immediately before and after the intervention, for each of the four 5-week tutoring sessions. The outside observer kept a continuous record of behaviors observed, and, on the basis of these pre-post observations, determined whether any students appeared to have made general progress in social functioning. End-of-year academic achievement, as measured by the Stanford Achievement Test, was evaluated for possible group differences. Finally, all tutors were interviewed upon completion of the tutoring regarding their opinion of the tutoring and what they perceived the benefits might have been.

Results

Test-retest reliability of the teacher-administered DBRS over the five-week interval was given at .82. Although 5-week test-retest reliability of the Attitude Toward School survey was weak (r = .41), internal consistency of the measure was nonetheless very high (KR20 = .94).

When possible, analysis of covariance was conducted between groups, with pretest scores as the covariate to control for any possible difference which may have existed prior to treatment. As can be seen by inspection of Table 1, differences between tutors

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Insert Table 1 about here

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and controls were not observed on number of absences, disciplinary actions, attitude toward school, or any of the 13 subscales of the Devereaux Behavior Rating Scale. Finally, no significant differences were found on the reading comprehension, word

study skills, math concepts, or math applications subtests of the Stanford Achievement Test.

Separate analyses were conducted for evaluation of target behaviors and outside observer evaluations. As described above, exhibition of previously targeted behaviors was evaluated on a daily basis by the classroom aide, and with whom the interrater reliability for 26% of experimental and control students had been established at .99, expressed as a correlation of behaviors observed between raters. Since some targeted behaviors were negative (e.g., kicks, fights, argues) and some were positive (e.g., use of appropriate voice, positive comments), operationalized behaviors were evaluated daily with respect to both negative and positive instances. Upon completion of the tutoring intervention, slopes were computed for each student's positive and negative instances of targeted behaviors over the time period of the tutoring interventions. Students were then evaluated with respect to whether they had made progress on these behaviors. Progress was defined as a positive slope on positive instances of targeted behaviors coupled with a negative or zero slope on negative instances of targeted behavior ; or, a negative slope on negative instances of targeted behavior coupled with a positive or zero slope on positive instances of behavior. By these criteria, students were evaluated with 100% reliability by two independent raters unaware of group membership. It was determined that five control and one experimental student was observed to have made progress in targeted behaviors throughout the tutoring intervention period. These differences, which in fact favored control students, were not statistically meaningful, $>< 2\ (1) = 2.32$, $p > .10$, using Yates' correction for continuity (Fergusen, 1981).

A "blind" outside observer assessed the pre/post performance of experimental and control students. During the two 30-minute pre and two 30-minute post observations, a continuous record (Cooper, 1981) of behaviors observed was taken during the observational periods. Reliability of this recording was assessed at 89% of agreement of events observed by a second rater who simultaneously evaluated 26% of the subjects.

On the basis of the pre/post continuous records and the DBRS ratings, an evaluation was made regarding which subjects had exhibited more appropriate school behaviors during the post-tutoring observation than they had during the pre-tutoring observation. By this evaluation, it was determined that 14 (of 23) students had exhibited more positive behaviors during the post-tutoring observational periods. Of these 14, 7 were experimental students, while 7 were control, $>< 2\ (1) = .00$, $p = 1.0$. using Yates' correction.

Finally, evaluation s of number of positive comments made by the tutor to the tutee were made. Reliability of assessment of positive comments was given at .95 expressed as a correlation between two independent raters rating 11% of tutoring sessions. Findings indicated that positive comments had descriptively increased. The mean median of the first three data points was 5.33 (SD = 4.4), while the mean median of the last three data points was 8.33 (SD = 5.8). These pre/post differences, however, were not statistically significant according to a correlated t-test, $t\ (11) = 1.59$, $p > .10$.

Anecdotal reports. In sharp contrast to the negative findings of the more objective measures, anecdotal reports of the benefit of tutoring were overwhelmingly positive. All teachers and paraprofessionals involved agreed it had been a valuable experience for tutees and tutors alike, and that both groups had gained socially and academically from the experience. Tutors, on their post-treatment interviews, indicated general agreement with this assessment. Ten of eleven tutors (one student transfered school before he could be interviewed) agreed that they had enjoyed the tutoring experience. Typical positive responses were, "it made me feel good to teach," "it was interesting," and "I liked helping (tutee) say the words." The one student who did not reply positively said that it took time from finishing his own work. Nine of the eleven tutors reported they had learned from tutoring. Students reported having learned "how to teach," "how to be responsible," "what teachers go through," an "how to ignore inappropriate behavior." Ten of the eleven reported they would like to tutor again. (When the teacher asked for volunteers to tutor during the last month of school, however, only seven of these students volunteered.) Four reported that their attitudes

had improved toward severely multiply handicapped students, but five others reported that their attitudes had not improved since they had "liked them before." Five of eleven tutors reported that they had changed as a result of tutoring. Coments included, "I became more responsible," "I'm not so bossy now," and "I understand teachers better." Seven tutors responded that tutoring had helped them with their own problems. ONe student reported, "I learned to think things out. When I saw (my tutee) have a fit, I saw how I looked." Other students reported, "it showed me how to handle things," "it helped me with my reading," and, "It helped me move up to other (behavior) levels; I used to have a bad attitude." Students who did not report that tutoring had helped them with their problems reported, "I don't know what my problems are," "it hasn't helped at all," and, "I don't have any problems."

Discussion

The present investigation can offer anecdotal evidence that this particular tutoring intervention was enjoyed by both tutors and tutees. In sharp contrast, however, is the quantitative analysis of a variety of more objective measures, including absences, disciplinary referrals, achievement test performance, attitudes tward school, behavior rating scales, pre/post observations, and change in targeted behaviors over the tutoring period. It must be acknowledged that any of the above measured can be considered imperfect, and that the investigation as a whole was vulnerable to many of the procedural threats which invariably accompany such in vitro tutoring research (See Scruggs & Richter, in press, for a discussion of this issue). However, it seems extremely unlikely to the present authors that, had any strong group differences emerged with respect to improved social behavior due to tutoring, we would not have been able to observe them. It is the conclusion of the present authors, then, that cross-age tutoring, of the type employed in this investigation, was not effective in improving the general social functioning of BD elementary grade students.

It may seem difficult, if not impossible, to reconcile the present findings with those of previous researchers who generally concede the social effects on BD tutors is

positive, and specifically those of Maher (1972) who offered data-based evidence that BD tutors improved in their social and academic functioning. However, upon closer inspection of this and related investigations some similarities emerge. Several previous investigations offered anecdotal evidence regarding the positive social effects of BD students as tutors without providing controlled quantitative support (Balmer, 1972; Csapo, 1976; Franca, 1983; Kreutzer, 1973; Lane, Pollack, & Sher, 1972; Lazerson, 1980). Taken together with the present investigation, these findings may suggest that tutoring may produce a positive effect on the student's perceptions of him/herself and others, but overall the effect is so slight that concomitant effects on behaviors are rarely observed. Thus, BD students who have tutored can report, as in the present study, that they developed an appreciation for teachers, that they learned how to respond to aversive behaviors, and learned "how to be responsible," without such perceptions having had a direct influence on observable behavior.

Another equally plausible explanation, however, is that tutoring can result in tangible improvement in social functioning, but that it does so only for certain individuals, and that the benefits are somewhat idiosyncratic and unpredictable. to support this notion, two "cast studies" are described below. These case studies represent individuals for whom teachers and project staff agreed had benefited positively from tutoring. It must be borne in mind, however, that, as case studies, they lack either within or cross-subject control, and are offered here simply to provide a measure of congruence with previously investigations:

Cast study 1. A fifth grade male subject serves as a case study report. The subject's target behavior was "responding in an appropriate voice." An appropriate voice was defined as a mild volume and positive comments. This subject's attitude toward the tutoring session and tutee was very poor at first. He would verbally lash out at the tutee and the aide. Eventually there was an altercation between the tutor and tutee which resulted in the two spending the tutoring session on opposite sides of the room. During the next session, however, the tutor's behavior improved and continued to do so. His number of positive comments increased from a three-day beginning

average of 1.67 to a three-day ending average of 7.33. His negative comments dropped from a three-day beginning average of three to a three-day ending average of one. This student was absent six days in the period of time immediately before the tutoring sessions and was absent only twice during tutoring. On an attitude-tward-school survey, his pre-tutoring score was 27% positive, while his post tutoring score was 53% positive. ON the teacher-rated Devereux Elementary School Behavior Rating scale, which was administered pre- and post-tutoring, this tutor improved in many categories (i.e., classroom disturbance, impatience, disrespect-defiance, and achievement anxiety).

In a a questionnaire following the tutoring program, this tutor reported (a) he did not like the tutoring at first, but once it got going he did like it; (b) he learned how to control a person's behavior y knowing when to ignore it; (c) that this ignoring helped him not to get mad at individuals, especially as he used to on the school bus; and (d) he realized teaching was harder than he thought. The classroom teacher and aide reported that this subject's behavior had greatly improved since he began tutoring. He even began to help out in the classroom, assisting a new deaf student in adjusting to school activities.

Case study 2. A third grade male student serves as the second case study. This student also proved to be a very good tutor. The student he was tutoring was difficult to keep on task. The tutor continued to respond even when the tutee did not want to work. This student quickly learned appropriate teaching skills in getting and keeping students on task. The average positive comments made for the first three days of tutoring was 5.67, while the average for the last three greatly improved at 20.67. The "blind" outside observer reported that this tutor's behavior seemed to improve on a pre/post measure. Both the outside "blind" observer and the aide reported that there were no incidences of the student's target behavior (fighting) exhibited during, or immediately after, the tutoring period. although number of absences and attitude tward school did not change, classroom disciplinary actions dropped from 32 in the period immediately prior to the tutoring program to three during the tutoring period.

Summary. The above cases cannot be taken a conclusive; yet they represent to the present authors the type of observed behavior so often reported in the tutoring research literature, and they are offered here to indicate that the present authors and also observed individual changes in social behavior possibly due to tutoring. The present study taken as a whole, however, suggests that such gains are atypical and cannot be generally expected in tutoring programs.

Conclusions. Although the present authors failed to document any general positive effect for tutoring on social behavior, we do not mean to assert that tutoring can never be a positive intervention. We have recently reported research in which positive effects have been found for BD students in tutoring interventions. Scruggs (1985) reported that in two experiments samples of mildly handicapped students, which included a large proportion of BD students acting as tutors and tutees, benefited academically over controls. Likewise, Osguthorpe, Eiserman, Shisler, Top, and Scruggs (1985) employed a sample of mildly handicapped students, of which nearly one third were self-contained BD students, as reading tutors of younger, normally functioning peers. Osguthorpe et al. concluded that tutors and tutees alike gained academically over non-tutoring controls, and tutors gained with respect to perceptions of their reading and spelling ability (total "self-esteem" scores, as in the past, were not affected). These findings are consistent with the conclusions of Scruggs et al. (in press) that acting a a tutor can impact upon achievement if the content employed allows for fluency building on the part of the tutor, and can impact upon attitudes tward the content tutored. In the tutoring configuration of the present investigations, such findings were not possible, given the level of academic discrepancy between tutors and tutees. The hypothesis of scruggs et al. (in press), that acting as tutor may not impact upon larger measures of social functioning, was supported by the present investigation. Although it is possible, or even likely, that the present tutoring intervention produced some benefits for some students, it seems unlikely that such tutoring is an intervention of sufficient strength to facilitate generally the type of behavioral change so often attributed to tutoring. Future research efforts can do much

to further replicate or refine these conclusions. Until further evidence is available then, it seems more prudent for teachers to imply more direct means of improving social functioning for those students in need of such improvement (i.e., modeling, feedback, direct reinforcement); and if tutoring is used, to bear in mind the words of Krouse, Gerber, and Kauffman (1981): "Although it has been demonstrated that academic and social gains are frequently obtained by the tutor, this in itself is not sufficient justification for the child to be a tutor. Instead, it must be shown that by being a tutor specific needs are being met" (p. 112).

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Table 1

Tutor and Control Mean Scores

Variable	Tutor Adjusted Mean	Control Adjusted Mean	MS_e	F*
Absences	1.62	1.79	2.21	.06
Disciplinary actions	20.99	23.56	239.03	.70
Attitude toward school	67.75	64.15	786.90	.10

Variable	Tutor Adjusted Mean	Control Adjusted Mean	MS_e	F*
Devereaux Behavior Rating Scale				
Classroom disturbance	12.91	14.37	16.05	.69
Impatience	11.18	12.35	7.55	.98
Disrespect/defiance	11.08	10.64	7.28	.15
External blame	11.38	10.67	29.59	.42
Achievement anxiety	11.50	12.28	15.66	.36
External reliance	17.26	17.18	14.26	.02
Comprehension	13.73	12.47	2.62	3.47
Inattentive/withdrawn	9.77	9.90	11.35	.01
Irrelevant responsiveness	11.13	10.94	9.03	.02
Creative initiative	13.89	12.76	3.59	1.87
Need for closeness to teacher	17.81	17.48	11.73	.05
Unable to change task	3.10	3.08	1.15	.00
Quits	3.30	3.22	1.16	.04

Variable	Tutor Mean	(SD)	Control Mean	(SD)	t*
Stanford Achievement Test**					
Reading comprehension	25.82	(23.25)	19.60	(24.04)	.60
Word study skills	31.64	(28.31)	23.90	(22.73)	.69
Math concepts	22.00	(21.74)	16.56	(12.67)	.66
Math applications	27.45	(21.83)	22.10	(17.53)	.62

*All obtained F and t values are non-significant, $p > .05$.

**Two subjects (one experimental and one control) did not take the Stanford Achievement Test.

Peer Tutoring with Behaviorally Disordered Students: Social and Academic Benefits

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Running head: PEER TUTORING

Abstract

The efficacy of tutoring programs involving behaviorally disordered (BD) students is reviewed. In general, it is condluded that tutoring with behaviorally disordered students (a) exerts a positive effect on academic functioning of the tutee, (b) under certain circumstances, positively influences academic functioning of the tutor, and (c) can increase social relations of the tutoring diad and attitudes toward the content area being tutored. In contrast, anecdotal reports of improved general social functioning, including self-esteem, are not supported by available research evidence. In addition, relative academic or social benefits of tutoring compared with alternative intervention strategies are largely unknown. Although outcomes of tutoring programs have generally been positive, teachers considering using tutoring as an instructional alternative are advised to monitor expected results frequently to determine overall effectiveness.

Peer Tutoring with Behaviorally Disordered Students: Social and Academic Benefits

Although the idea of children teaching other children as an effective means to quality education has been advocated for centuries (see Allen, 1976), there has, in recent years, been renewed interest in the use of tutoring strategies in education (Devin-Sheehan, Feldman, & Allen, 1976). Generally, benefits derived from tutoring have been thought to include reducing teacher-pupil ratios, social improvement, and academic gain.

Recently, tutoring interventions have been implemented within special education settings (Gerber & Kauffman, 1981; Strain, 1981a). It seems logical that peer tutoring represents a potentially useful intervention within special education settings, specifically when one considers the individual needs generally attributed to students assigned to special education. Tutoring interventions generally have been thought to produce positive results in four major areas: (a) social behavior (Lane, Pollock, & Sher, 1972); (b) academic performance (Csapo, 1976); (c) interest in school and academic content (Lazerson, 1980); and (d) self-concept (Jenkins & Jenkins, 1982). In addition, tutoring has been mentioned as a potentially valuable tool in facilitating mainstreaming (Christoplos, 1974).

It can be readily assumed that students classified as behaviorally disordered (BD) could stand to gain much in such areas. Deficiencies in social and academic behavior, interest in and attitude towards school and academic related tasks, as well as "self-concept", have commonly been noted as problems in this population (Kauffman, 1985).

A tutoring program for such students could easily be imagined. For a behaviorally disordered student, poor in social interactions and low in academic functioning, a tutoring intervention could be arranged in which the BD student tutored a younger, less able student, and thereby gianed self-confidence, academic knowledge, and improved social functioning. WEre such benefits commonly achieved, peer

tutoring could be considered a most valuable resource in the educaitonal training of behaviorally disordered students. Unfortunately, such outcomes have not always been realized, and the exact benefit of tutoring with respect oto behaviorally disordereds students to date seems uncertain. The purpose of the present review was to determine the extent to which the high expectations for tutoring interventions with behaviorally disordered students have been emppirically demonstrated. Since the "technology of utilizing pupils as instrucitonal resources is still in its infancy" (Young, 1981, p. 323), the following review is intended to focus direcitons for future research as well as describe and sytn;thesize findings to date.

Procedure

For this review, tutoring was defined to included delivery of academic instruciton by another student, eith older or the same age as the tutee. By this definition, studies that utilized poeers as intervention agents in nonacademic sutations, such as social modeling or delivering reinforcers (e.g., Stainback & Stainback, 1982; Strain, 1981a), or in which peer tutoring behavior was employed as a dependent measure (e.g., McCarty, Griffin, Ppolini, & Shores, 1977), were not included. In addition, studies were included in which subjects had been specifically identified as exhibiting deficits in social/emotional functioning.

Three data bases (ERIC, Psychological Reports, Dissertation Abstracts International) were searched for any articles pertaining to tutoring interventions involving behaviorally disordered/emotionally distgurbed children. IN additon, reference lists of literature reviews of tutoring (e.g., Devin-Sheehan et al., 1976) were examined for aditional references. Three books (Allen, 1976; Strain, 1981b; Jenkins & Jenkins, 1982) were examined for additional references. Through theses sources, a totoal of 17 articles reporting interventions involving behaviorally disordered children and youths were located. The following variables were then coded: Experimental design, subject areas tutored, description of tutors, description of tutees, intensity of intervention, comparison group, procedures, and reported results. Reliability of all

coding was obtained by three coders discussing and resolving any differences previously noted in coding until 100% agreement was reached.

Results

Descriptive Information

Of the 17 tutoring interventions evaluated, six employed single subjet designs, and five were pre-post investigations (i.e., one group involved in tutoring was evaluated at the beginning and the end of the tutoreing intervention without reference to a comparison group). Four investigations employed a no-treatment control gorup, while two compared tutoring with specific alternative teaching strategies.

The subject area most often chosen for tutoring was reading (5), but many other content areas were employed, including math, spelling, and social skills. Twelve studies empoyed tutors from middle and high schools tutoring mostly chikldren (11) from primary and elementary grades. In eleven of the studies, the tutors were labeled emotionally disturbed or behaviorally disordered. IN all studies, the tutees were considered to be exhibiting learning and/or behavior problems. More specific details onindividual studies are given in Table 1.

Insert Table 1 about here

Academic benefits

Single subject investigations. Thirteen of the 17 studies examined acaemic gain of tutors or tutees, or both, as a result of tutoring interventions. Of these 13, six emkployed single subject methodology to examine directly possible increases with respect to specific academic skills or facts (Franca, 1983; Gable & Kerr, 1980; Jenkins, Mayhall, Peschka, & Jenkins, 1974; Maher, 1984; Norris, 1978; Stowitschek, Hecimovic, Stowitschek, & Shores, 1982). IN all cases, tutees demonstrated measurable gains in the content area being tutored, ragrdless of the category of exceptionality. Feraca (1983) found that BD tutees decreased in math errors; Gable

and Kerr (1980) reported that academically deficient tutees met math objectives; and Norris (1978) found that autistic tutees gianed in knowledge of math facts. Jenkins et al. (1974) determined that learning and behaviorally disordered students made gains in three basic skills areas when tutored by oder, normallly functioning students. Majer (1984) reported that educable mentally retarded elementary-level tutees increased the percentage of work assignment completions and improved in performance on tests and quizzes. Stowitschek, et al. (1982);, employing a design in whcih tutor and tutee roles were alternated, found that all students demonstrated improvement of speling behaviors. The relation between tutor modeling and tutee performance, however, was clearly apparent for only two of the nine subjects.

When academic achievement of tutors was assessed, gains were also found. Maher (1984) and Franca (1983) both indicated that BD tutors had made academic gains as a rsult of tutoring. Gable and Kerr (1980), however, did not observe academic progress with the BD students thety had employed as tutors. Gable and Kerr concluded that their "fdindings may be attributagble to the fact that...subskill operations taught were often substantially below the competency level of the tutors" (p. 122).

Pre-post designs. In three studies, pre-post designs were employed to investiagte tutoring interventions (Csapo, 1976; Lane, Pollock, & Sher, 1972; Weiner, Goldman, Lev, Toledano, & Rosner, 1974). Csapo found a significant pre-post improvement for tutors and tutees on thge Wide Range Achievement Test (WRAT). Lane et al. Found that eighth- and ninth-grade tutors and tutees exhibiting maladaptive behaviors made gains greater than expecxted on the Metropolitan Achievement Test. INneach of these investigaitons, tangible academic gains were repported for behaviorally disordered student tutors. Weiner et al., however, reported no appreciaible gains for tutor or tutee.

Control group designs. Four studies compared the effects of tutoring interventions with subjects who either received no treatment or who received an alternative instructiunal treatment (Kane & Alley, 1980; Kreutzer, 1973; Maher, 1982; Wingert, 1981). Under these curcumstances, tutoring interventions appar to have been

much less successful in changing academic behaviors. Maher (1982) indicated that BD students involved as tutors of lower functioning students made greater academic gains than did students in counseling interentions. In this study, however, school grades rather than more objective measures of academic ahcievement were employed, and statistical procedures were incomplete. The other three gorup design studies fialed to demonstrate that tutoring was superior to no treatment or other treatments as measured by standardized tests, and did not rpoert academic effcts on tutors. Kane and Alley (1980) found no significant differences on standardized test scores between tutored and teacher-led incarcerated students. Kreutzer (1973) found no difference in gains scores on hospitalized, emotionally disturbed students on the WRAT compared with a no-treatment control group. Likewise, Wingert (1981) found no significant difference between behaviuorally disordered student son academic performances measured by the Woodcock Reading Mastery Test. IN the Wingert study, howver, significantly greater gains than controls were found on a criterion test which more directly reflected the content being tutored.

Social Benefits

Ten of the studies reviewed examined potential social benefits to tutors or tutees a s a result of tutoring interventions. These potential benefits took many different forms, including on/off task behavior, disruptive events, or larger more global issues such as self-concept and attitudes toward school content areas. IN some cases, these benefits were examined directly; in other cases they were of secondary inportance, and the authors relied upon anecdotal evidence to suport these potential benefits.

Single subject investigations. Two studies that employed single-subject methodology investigated issues ofosocial functioning (Franca, 1983; Maher, 1984). Maher (1984) reported decreased in disciplinary referrals for behaviorally disordered student tutors. In one of the more interesting and thorough investiagions of peer tutoring with BD students, Franca (1983) directly exained several potential social benefits as a result of tutoring. Franca reproted that tutors and tutees improved in

atitudes toward math and positive social interaction between tutor and tutee in each diad, including less frequent negarive social interactions between tutor and tutee. ON the other hand, Franca found no improvement on a self concept survey for tutors or tutees, and no improvement on sociometric rating for tutors or tutees. In additon, changes on teachers's overall rating scales and evaluations of social behaviors wre few and inconsistent.

Pre-post designs. Five studies that employed pre-post measures also assessed possible social benefits of tutoring (Balmer, 1972; Csapo, 1976; Lane et al., 1972; McHale, olley, Marcus, & Simeionsson, 1981: Weiner et al., 1974). McHale et al. employed nonhandicapped elementary aged students as peer tutors of autistic, withdrawn children and demonstrated that on-task behavior on the part of the tutees increased, while CSapo documented an increasing number of positive remarks between tutors and tutees over the tutoring period. Other results, such as thtat the tutors "dressed more neatly," were less clearly documented. Balmer (1972) reported that "friendlier play" occurred as a result of tutorin gintervention, but offered no data to support this assertion. Lane et al. (1972) maintained that tutors decreased in disruptive behafiors as measured by teacher ratings. Since o comparison group was employed, however, it is difficult to know to what extent to attribute the decrease in disruptive acts to the tutorin g rather than some other even occurring concurrently. Weiner et al. (1974) found no general differences in social functioning as a result of the tutoring. This investigation was more qualitative and quantitative, however, and did not employ specific measures of social functioning.

Control group designs. The remaining three studies which examined social benefis employed control group deisgnbs. Two of the three employed control groups in which groups involved in tutoring were compared with groups who had had no contact with the experiement other than the pre-poost measures (Asper 1973; Lazerson, 1980). Asper (1973) reported that cross-age tutoring appeared to increase the frequency of social contact initiated by first- and fourth-grade withdrawn tutees toward their peers. These contracts apparently did not increase between withdrawn

students and their teacher. Lazerson (1980) reported that teachers noted social benefits for both tutors and tutees. However, no differences were found for either group on a self-concept scale or a school behavior rating scale which included categories of disrespect, classroom disturbance, attentiveness, and insecurity.

Maher (1982) compared cross-age and peer tutoring with counseling and stated that significantly fewer disciplinary problems were reported by the school or teachers for behaviorally disordered students engaged as tutors of younger handicapped students. Maher also asserted that students involved as tutors "came home earlier at night," but offered little strong support for this assertion.

Discussion

A review of available literature has shown that tutoring interventions to date involving behaviorally disordered students have employed greatly differing methodologies, tutoring strategies, and measures to support the effectiveness of carrying out tutoring in many different domains. Given such diversity, it may be difficult to arrive at any firm conclusions regarding tutoring interventions with this population. Based upon the available evidence, however, those of other tutoring intervention studies in special education (Scruggs & Richter, in press; Osguthorpe, Scruggs, & White, 1984), and reviews of other tutoring interventions involving non-handicapped students (Cohen, Kulik, & Kulik, 1982; Devin-Sheehan, Feldman, & Allen, 1976), it does seem possible that some conclusions for the overall effectiveness of tutoring can be offered:

1. Students involved as tutees almost invariably gain knowledge of the content being tutored. Obviously, the amount of gain depends on the level of structure, type of content being taught, and ability level of the tutee, but it does appear that if tutoring programs are reasonably well structured and supervised, the tutee will learn that content, regardless of whether the tutor is handicapped or nonhandicapped (Cohen, Kulik & Kulik, 1972; Csapo, 1976; Devin-Sheehan, Feldman, & Allen, 1976; Franca, 1983; Jenkins & Jenkins, 1974; Lane et al., 1972; Maher, 1982; Norris, 1978;

Stowitsckek et al., 1982). As an example, in the study by Stowitschek et al., correct spelling behavior increased for many subjects apparently independently of the manipulated structure of the tutoring sessions. In addition, academic gains are most likely to be verified when the dependent measure closely resembles the material being tutored. Thus, Wingert (1981) reported significant gains in pre-post criterion tests on the tutoring materials, but found no such gains on a standardized readin measure. The relevance of the question of "generalized gains" depends more on the relevance of the specific tutoring materials to the standardized test than it does to the tutoring procedure per se. That is, if gains on standardized achievement tests are desired oucomes of tutoring interventions, it is necessary to ensure that tutoring materials are appropriate and the intervention itself is sufficiently intensive to produce such gains. Clearly, there is nothing in tutoring per se to guarantee gains on standardized achievement tests.

2. Tutors gain academically if the material being tutored is appropriate to serve this purpose. Jenkins and Jenkins (1982) reported that tutors are more likely to gain academic skills "if they are themselves somewhat deficient in the subject area tutored" (p. 19). Obviously, a student well versed in algebra will stand to gain little knowledge of addition facts if such content is tutored. But the present analysis can go somewhat further than this. Tutors are likely to exhibit gain when they are tutoring in an area in which they have a need for fluency building activities (Mellberg, 1980; Singh, 1982). Thus, if a tutor has acquired decoding skills but has not reached fluency (i.e., accuracy with speed), this tutor can be expected to gain academically if the tutor is tutoring a student who is on either an acquisition or fluency building level of that content. On the other hand, if the tutors have already mastered the content, they are unlikely to gain from tutoring (Gable & Kerr, 1980). In addition, tutors can expect to gain academic skills, even if they are also at the acquisition stage of the task, if flash cards are employed so that the tutor can monitor correct responses (Franca, 1983; Stowitschek et al., 1982). Although anecdotal reports abound that tutors gain more than tutees in such situations, there is no available evidence to support this assertion, the truth of which doubtlessly depends greatly opon the nature of the content area being tutored.

3. Tutors and tutees alike appear to benefit socially in areas directly involving the tutoring intervention. In general, it can be stated that some specific social benefits arise from tutoring. Students can be expected to gain from tutoring with respect to positive attitudes and interactions between tutor and tutee (Asper, 1973; Csapo, 1976; Franca, 1983). It has been reported that the number of positive comments between tutor and tutee can be seen to increase. In addition, specific attitudes reported toward the content being tutored can be expected to increase on the part of tutors and tutees (Franca, 1983; Lamport, 1982). Whether or not these improved attitudes translate into improved achievement, however, has not been substantiated.

4. Students do not appear to benefit from tutoring interventions with respect to global, social, or self-concept measures. The inability of tutoring interventions to influence global self-concept surveys has been well documented (Cohen, Kulik, & Kulik, 1982; Franca, 1983; Kreeutzer, 1973; Lazerson, 1980; Roddy, 1981; Sharpley, Irvine, & Sharpley, 1983). In addition, sociometric measures and teacher surveys have generally failed to document improvement in social functioning (Franca, 1983). Although the possibility exists that such self-esteem and sociometric ratings are simply too weak as measures to document progress, it may be more likely that tutoring interventions cannot generally be expected to effect general social functioning.[1]

It may be concluded, then, that for behaviorally disordered students (and perhaps many others involved in tutoring interventions), (a) tutors and tutees can gain academically from tutoring interventions if materials are chosen deliberately for this purpose, and (b) social improvements are realized in tutoring interventions if these social areas closely reflect the intervention activities. Although these conclusions seem relatively well supported, there are still many questions which have not been answered. These questions include the following: Does peer tutoring work better than specific alternative instructional strategies, such as computer-assisted instruction, small group teacher-led direct instruction, or teaching in indiependent study strategies? Since students classified as behaviorally disordered may have social difficulties responding to one or more of these treatments, future research may uncover

the type of instructional procedures best suited to BD classrooms--including peer tutoring. Second, is peer tutoring as reliable a method of improving social/behavioral functioning as other instructional alternatives? Tutoring programs are often more difficult to organize and maintain, particularly when several different classes and teachers are involved. Whether this method of increasin social functioning is superior to other possibilities (e.g., positive practice with positive feedback and rewards) has yet to be determined. Only through future research can answers to these questions be offered.

In addition, future researchers would do well to adapt research designs to address appropriately the above issues. Future group-design studies should employ appropriate comparison groups so that the effectiveness of tutoring interventions can be compared with specific instructional alternatives. Single subject investigators could concentrate on specific within-subject instructional alternatives, or daily monitoring of possible changes in social behavior as a result of tutoring. In addition, as social benefits of tutoring have frequently been difficult to document, it seems imperative that future investigations employ several measures of social functioning, including behavioral as well as attitudinal data. The present authors are currently investigating such possibilities.

In conclusion, it appears that tutoring, in spite of its limitations, is a valuable instructional strategy that may be employed profitably by teachers of behaviorally disordered students, particularly if formative evaluation of the tutoring intervention is conducted by the teacher. It is important that teachers address on an individual basis the issue of tutor benefits, succinctly described by Krouse, Gerber, & Kauffman (1981): ". . . Although it has been demonstrated that academic and social gains are frequently obtained by the tutor, this in itself is not sufficient justification for the child to be a tutor. Instead, it must be shown that by being a tutor specific needs are being met" (p. 112). With this caveat in mind, teachers can ensure that a given tutoring program can be a successful experience for all students involved.

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Footnote

[1]Although peers have been employed successfully as models or tutors of specific social skills (see Strain, 1981b), these studies constitute a body of literature not addressed in the present review.

Table 1

Articles Included in This Review

REFERENCE	TYPE OF DESIGN	SUBJECT AREAS	DESCRIPTION OF TUTORS	DESCRIPTION OF TUTEES	LEVEL OF INTERVENTION	COMPARISON ACTIVITIES	PROCEDURES	REPORTED RESULTS
Asper, 1973	Single-subject (multiple baseline)	Not specified	6th and 8th graders; N=8	4 1st graders, 4 4th graders; "withdrawn"; N=8	Groups 1-3: 10, 8, or 7 weeks, 30 min/day, 3 days/week. Group 4: no tutoring	No treatment control Group 4 had no tutoring (13 weeks baseline)	Tutoring took place in classroom using material chosen by teacher. Frequency of social contacts was observed and recorded twice a week prior to and during treatment and baseline conditions. Treatment medians were compared.	Increased social contact between tutees and peers. No effect on frequency of social contact with teacher; however, author concludes the increases were slight and intervention should be used in conjunction with other therapies.
Balmer, 1972	Pre-post	Prevocational arts; reading	4th-6th grade, aggressive or withdrawn, academically deficient, N=23	"Younger", LD students, N=23	Daily, 6 months (including 2-month training period)	None	Tutors helped tutees with assignments and class projects in the special education classroom.	Anecdotal reports of school improvement, "friendlier" play.
Csapo, 1976	Pre-post	Reading	Juvenile delinquents, ages 13-15 N=6	Age under 10, reading level at least 2 years below grade level, N=8	daily, 10 weeks	None	Tutors were paid to teach reading during summer school. Pre- and post-tests were given to tutors and tutees. Data was collected on several tutor behaviors. (WRAT # of words)	Tutors: (1) Significant pre-post gains for mean # of words read correctly on WRAT. (2) Increase in # of positive remarks of tutor to tutee and tutor to tutor. (3) Increase in # of nights student arrived home prior to midnight. (4) Decrease in # of adjudicated delinquencies during tutorial period. Tutee: (1) Increase in WRAT oral reading (pre-post).
Francis, 1983	Single-subject (multiple baseline)	Math	Middle school students with behavior disorders; N=4	Middle school students with behavior disorders; N=4	15 minutes daily, 7-19 sessions total	None	Tutors helped tutees with fraction problems. Tutors and tutees were probed on fraction problems following each session.	Decreased math errors for tutors and tutees. Few and inconsistent changes in social behavior. Improved attitude toward math for tutors and tutees.

(table continues)

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REFERENCE	TYPE OF DESIGN	SUBJECT AREAS	DESCRIPTION OF TUTORS	DESCRIPTION OF TUTEES	LEVEL OF INTERVENTION	COMPARISON ACTIVITIES	PROCEDURES	REPORTED RESULTS
Gable & Kerr, 1980	Pre-post	Math	80 adolescents from a residential setting; N=6	Middle school students scoring 2 to 4 years below grade; N=23	30 minutes daily, 8 weeks	None	Tutors instructed tutees using a modified version of the EB Press Tutorial Math Combination Program.	Tutees mastered 719 objectives (out of 827) in the areas of addition, subtraction, and multiplication. Little gain obtained for tutors.
Jenkins, Mayall, Peschka, & Jenkins, 1974	Single subject (Multiple treatment design, 5 experiments)	1) Word recognition; 2) Spelling; 3) Multiplication; 4) Oral reading; 5) Multiplication.	Older children	1) LD and EMR, ages 7-10, N=13; 2) 3rd graders, LD, N=4; 3) 4th graders referred to resource room for assistance in multiplication, N=5 4) EH or EMH,N=5 5) N=5 3rd graders referred for multi-assistance	2 10-minute sessions daily for 8 to 10 days: 1) 4 to 8 days; 2) 4 days; 3) 5 days; 4) 12 days of group and then 10 days of tutoring; 5) DK	Teacher-instructed small groups	Each child was involved in daily sessions under both 1-to-1 cross-age tutoring and small group conditions. Students were tested after each session, or students received group instruction for a designated period of days followed by tutorial instruction.	In each study, children made greater gains in tutorial condition. In addition, in Experiment 3 and 5 tutors gained too (reg. 6th grade students).
Kane & Alley, 1980	Control group	Math	Incarcerated, ages 15-17, N=not given	Incarcerated LD, ages 12-17, N=38	45 minutes daily, 8 weeks (38 days)	Teacher-instructed	Pre- and post-intervention math achievement tests were given to groups instructed by either peer tutors or a teacher.	No differences between experimental and control tutees on achievement measures.
Kreutzer, 1973	Control group	Reading, social adjustment	Underachieving 9th graders, ages 14-15, N=18	Emotionally disturbed children at state hospital, ages 8-14, N=18	45 minutes daily, 5 months	No treatment control	Tutors were transported by bus to state hospital to work with tutees. Also, tutors conducted weekly staff meetings to deal with problems.	No differences between experimental and control groups on: - Wide Range Achievement Test; - California Test of Personality; - Subtest of Personal Adjustment.

(table continues)

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Special Education Students as Tutors: A Review and Analysis

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Abstract

Although accounts of cross-age and peer tutoring date back to the first century A.D., only recently have special educators begun to investigate its effects with handicapped students. The purpose of the present article is to synthesize the results of these investigations, emphasizing the effects of tutoring on the academic and personal/social skills of both tutors and tutees. In general, research has shown that handicapped and remedial students can be trained to tutor both peers and younger students in a variety of content areas. Results further show that academic and personal/social benefits come to special education students, as well as to those they tutor; although the data regarding academic achievement is more convincing than the data regarding changes in general self-esteem. Following the summary of results of tutoring, implications for instruction are discussed, and suggestions are given for improving the quality of future tutoring research.

Special Education Students as Tutors:
A Review and Analysis

Qui docet Discet (one who teaches learns)
Learning is a social act (Meiklejohn, 1882)

Tutoring is one of the oldest forms of instruction known to society. As early as the first century A.D., Quintilian, in his Institutio Oratoria, described instructional settings where older children were tutoring younger children. Between the years of 1530 and 1550, additional accounts are given of tutoring programs initiated in Germany and by the Spanish Jesuits in the College of Lisbon (Paolitto, 1976). These programs emphasized the benefits that accrue to the tutors as well as to the tutees. Student monitors, teaching ten students in a classroom, became a popular in these early years.

In 1797, Andrew Bell, a Scotsman, developed one of the first exportable tutoring systems (Bell, 1797). Bell had been asked by the British government to establish a school for orphans in Madras, India. Since Bell was not a professional educator, he broke from traditional patterns of British schools and created an elaborate educational system which was based on older students tutoring younger students. As the program matured, Bell noted that his classroom behavior problems decreased, and that student academic programs accelerated. After Bell published his first account of the program in 1797, Joseph Lancaster, a British educator, was intrigued by the system and began to disseminate it throughout the British Isles and France (Le Compte de Laborde, 1815). By 1816 there were about 100,000 children being taught in England and Wales using the Bell-Lancaster system (Bell, 1817).

The reasons for the decline in popularity of the Bell-Lancaster system are not completely clear. Some have suggested that educators began to be less satisfied with the quality of the instruction that untrained 8 or 9 year old tutors were able to deliver (Dures, 1971). Others have asserted that as the supply of professional educators grew, and as they became more well organized, to dismiss unpaid, untrained student

tutors was to their professional and financial advantage (Allen, 1976). Another societal force which mitigated against the Bell-Lancaster system was the increasing tendency of schools toward self-contained classrooms where students were segregated according to age. As children were placed in these graded classrooms, it became less convenient to have older students helping the younger ones.

Purposes of Tutoring

At first glance, tutoring may seem to have a simple and singular purpose: to transfer new knowledge to the tutee. But the purposes and measured effects of tutoring are neither simple nor singular. Many investigators have been more interested in the benefits that come to tutors than to tutees. Bell, himself, was at least as impressed by the growth in his tutors as he was by the new knowledge transferred to other students. As early as the 1600's, Joachim Fortius said:

> . . . if students wish to make progress, they should arrange to give lessons daily in the subjects they are studying, even if they have to hire their pupils. (Gartner, Kohler, & Riessman, 1971, p. 14-15.)

This passage illustrates the philosophical basis for the many research studies which have focused on tutor growth as opposed to tutee growth. So the assumption that tutoring programs are established solely for the benefit of helping tutees learn academic skills is a common misconception. Equally incorrect is the view that tutoring is simply another teaching method, a technique for transmitting information. From their inception, tutoring programs have been multi-faceted experiments in socialization. The first effect Bell noted in his program was the improvement in classroom behavior, not students' performance in a spelling bee, but their ability to attend and their willingness to help other students master the task at hand.

Since that time, teachers and other observers have noted that tutors often appeared to gain as much or more than the students they tutored. Social benefits, such as improved self-confidence, self-esteem, attitude toward school, and responsibility, as well as academic benefits have been reported (Allen, 1976; Jenkins & Jenkins, 1982).

If such reports are true, it follows that special education students could stand to gain much from acting as tutors. In fact, tutoring, and other peer interventions, have recently been investigated within special education settings (Gerber & Kauffman, 1981; Krouse, Gerber, & Kauffman, 1981; Strain, 1981). Often, however, the focus has been upon the handicapped student as the recipient of the instruction. In addition, some previous reviews of tutoring have excluded many studies involving handicapped populations (Cohen, Kulik, & Kulik, 1982; Devin-Sheehan, Feldman, & Allen, 1976). The purpose of this paper, then, is to synthesize previous research literature in which special education students have served as tutors.

For the purposes of this review, "tutoring" will be defined to include those investigations in which special education students delivered academic instruction to other students on a one-to-one basis. By this definition, studies in which students were employed as non-academic behavior change agents for such student behaviors as: cooperative play (e.g., Morris & Dolker, 1974; Young & Kerr, 1979), self-feeding (e.g., Gross, 1975), extinguishing tantrums (e.g., Whalen & Henker, 1969), or imitation (e.g., Whalen & Henker, 1969), are not included here, although by other standards such activities may be referred to as "tutoring." In addition, the recent literature which has emerged on "cooperative learning" (e.g., Buckholdt & Wodarski, 1978; Madden & Slavin, 1983; Slavin, Madden, & Leavey, 1984), although interesting in itself and somewhat similar in appearance and objective, has not been included as it is considered to be beyond the scope of the present review.

Using this more limited definition, research will be reviewed which measured the effects of tutoring on the academic performance and personal/social development of both tutors and tutees. First, findings will be analyzed which focused on the benefits of tutoring for those receiving the instruction, the tutees. In most studies, the students serving as tutees came from special education settings, while in a few instances they came from the regular classroom. Next, research will be discussed which focused on the benefits that come to handicapped students who function as tutors. Unlike previous reviews of tutoring research, studies involving regular class students as tutors will not

be included. Finally, conclusions and recommendations will be given for employing tutoring programs in special education.

Tutee Benefits

The hypothesis is that handicapped students can effectively serve as tutors of other students has received overwhelming support in recent research literature. Virtually every experimental or quasi-experimental investigation conducted in this area has concluded that properly trained students are able to function effectively as tutors of appropriately selected tutees. These studies, conducted over a wide variety of content domains, are discussed below by 'category' of tutor.

Learning Disabled or Academically Delayed Tutors

Students who are themselves academically deficient have often been chosen as tutors of lower academically functioning tutees. Since the tutors in these investigations have most consistently exhibited reading disabilities, reading has generally been chosen as the tutoring content. Thus, in interventions ranging from 6 to 16 weeks, Epstein (1978), Lamport (1982), Landrum and Martin (1970), Mellberg (1980), Scruggs (1985), and Top (1984) presented data that suggested that tutees had increased reading skills as a result of the tutoring interventions. In the Mellberg (1980) investigation, learning disabled (LD) and educable mentally retarded (EMR) students, as well as regular class students, were employed as tutors. Results of the investigation indicated that tutees gained equally from the intervention, regardless of the type or existence of handicap on the part of the tutor. Mellberg (1980) concluded that LD and EMR students could be as effective as non-handicapped students in the role of tutor.

In Scruggs' (1985) investigation, LD students were employed as either cross-age tutors of other LD students (Exp. 1), or same-age tutors alternating tutor and tutee roles (Exp. 2). Results of this investigation indicated that both tutoring configurations were effective in raising reading achievement of the tutees. In addition, cross-age tutees reported more positive attitudes toward school than did controls. In a similar study, Top

(1984) trained fifth and sixth grade LD students to tutor academically delayed regular class first graders in reading. The results showed that even though first graders in a comparison group received an equivalent amount of reading instruction, the first graders who were tutored by the LD students performed significantly better on both criterion and standardized reading tests.

Two investigations directly examined mathematics achievement. Singh (1982) found that LD tutees made significant gains in mathematics achievement subtests over non-tutored LD students. Swenson (1975) reported one of the rare cases in which achievement of tutored did not improve, relative to a no-treatment control group. Mellberg (1980), however, did report mathematics as well as reading achievement gains for students tutored by LD and EMR students in summer programs.

Finally, Higgins (1982) used an alternating tutor-tutee design, and found that students learned more spelling words when in tutoring and free study conditions than they did in a no-remediation control condition.k Tutoring performance was not observed to be superior to that of a free study condition, however.

Behaviorally Disordered Students as Tutors

Investigations primarily involving behaviorally disordered (BD) students as tutors have generally supported the investigations involving LD tutors with respect to tutee academic gain. Maher (1982, 1984), in two investigations, found that BD students could function effectively as tutors of younger EMR students in a variety of content areas. Maher (1984) indicated that amount of completed academic work increased, as did weekly test scores of the tutees. Csapo (1976) and Lane, Pollack, and Sher (1972), using pre-post designs, concluded that BD students could effectively tutor younger, lower academically functioning students in reading, in that reading achievement of tutees increased over expected levels.

Franca (1983) and Gable and Kerr (1979) using single-subject methodology and criterion-referenced measures, presented data which indicated BD tutees gained math skills from older BD tutors. In a similar investigation, Stowitschek, Hecimovic,

Stowitschek, and Shores (1982) provided evidence that BD adolescents could effectively tutor each other in spelling.

Mentally Retarded Students as Tutors

In addition to the Mellberg (1980) study cited above, researchers have recently indicated that educable mentally retarded (EMR) students can function effectively as tutors of spelling (Truesdale, 1976), and sign language (Custer, Osguthorpe, 1983; Eiserman, 1985). In addition, reports by Brown, Fenrick, and Klemme (1971) and Snell (1979) have indicated that lower functioning retarded students can effectively serve as tutors of word recognition and language skills.

In a series of studies investigating the effects of "reverse-role tutoring," mentally retarded students taught sign language to same age peers from the regular classroom (Custer & Osguthorpe, 1983, Osguthorpe, et al. 1985). The results of these studies showed that in addition to learning basic sign language, regular class tutees interacted significantly more often with their tutors during nontutoring time, as measured through direct observation.

Finally, Lombardo (1976) examined the relative performance of graduate students, average 4th graders, and retarded students as tutors of younger retarded students on an associative learning task, as assessed by tutee gain. Lombardo concluded that type of tutor did not affect the learning performance of the tutee.

Conclusion

The above review indicates that special education students have consistently been seen as effective tutors of both handicapped and non-handicapped students in a variety of academic content areas. In spite of these positive findings, however, two major questions remain to be resolved: (a) how effective is tutoring as compared with specific alternative instructional procedures (rather than free study), and (b) in what way do tutors benefit from these inerventions? With respect to the first question, Scruggs and Richter (in press) observed that tutoring sometimes seemed less effective when

compared to such alternatives as teacher-led small group instruction. Although tutoring can be viewed as a positive intervention in cases in which direct teacher contact is not possible, the relative superiority of tutoring over other methods of instruction remains to be clearly documented. It would be important to know, for example, whether teachers could more effectively employ their time in small group teacher-led direct instruction, or in supervising tutoring pairs covering the same content. Further research is needed to investigate these possibilities.

With respect to the question regarding tutor benefits, a great deal is known and will be described in the following section. The issue of possible tutor benefits is of critical importance for two reasons. First, it is necessary to justify the time expenditure of the tutor, whi is necessarily losing potential instructional time by tutoring. Secondly, many researchers have investigated tutoring interventions primarily with respect to tutor benefits. These investigations are described below.

Tutor Benefits

Given that reverse-role tutoring is generally found to benefit the tutee, the following section discusses social and academic benefits which have been realized by the tutor.

Learning Disabled or Academically Delayed Tutors

The "Tutee Benefits" section has provided information that LD (as well as BD in mentally retarded) students have functioned effectively as tutors. These students have often, themselves, benefited from tutoring. Mellberg (1980) suggested that LD (and EMR) tutors made greater gains in reading and arithmetic than control students during the course of a summer tutoring program. LD tutors in the Singh (1982) investigation made significant gains in mathematics concepts/applications subtests over non-tutored LD students, but did not gain computational skills, as had their respective tutees. Likewise, Scruggs (1985, Exp. 1) reported that cross-age LD tutors scored significantly higher than control students on word attack skills, but did not gain relative to controls on

a criterion-referenced measure. These tutors did not report more positive attitudes toward school. However, Top (1984) found both criterion and standardized reading gains for LD tutors over LD control students. The results also showed that LD tutors' attitude toward academic skills increased significantly more than LD students who did not tutor. Lamport (1982) reported that reading disabled tutors outperformed control students in decoding skills after a tutoring intervention. In addition, the tutors reported more positive attitudes toward school than control students. Landrum and Martin (1980), using a pre/post design, reported that tutors had gained nearly twice as much as tutees had, with both groups gaining well over expected levels.

When tutors and tutees alternated roles (Epstein, 1978; Higgins, 1982; Scruggs, 1985, Exp. 2) all students gained in the content area tutored. In the scruggs (1985, Exp. 2) investigation, attitude changes were not observed, while Epstein (1978) and Hibbins (1982) did not investigate potential social benefits.

Behaviorally Disordered Students as Tutors

Social benefits. Social benefits to BD tutors have been more systematically evaluated than social benefits to LD tutors, perhaps because such potential benefits have more often served as the major research question (Scruggs, Mastropieri, & Richter, in press). Csapo (1976) and Lane, Pollack, and Sher (1972) reported that BD students employed as tutors evidenced improvement in social functioning during the course of the tutoring experience. Lane et al. (1972) reported that tutor's disruptive behavior decreased, and that tutors reported more self-confidence, more responsibility, and expressed less anger than they had prior to the seven-month, twice weekly tutoring intervention. Csapo (1976) reported that tutors (a) increased in number of positive remarks to tutee and other tutors, (b) came home earlier at night, and (c) decreased in number of adjudicated delinquencies, with respect to their performance prior to ten weeks of daily tutoring. Interpretation of these highly positive findings, as well as those of Lane et al. (1972), must be tempered by the fact that both investigations had employed pre/post designs. The absence of a control group in both of these studies

opens up the possibility that some of these reported benefits may be attributable to other concurrent interventions in the school or home environments.

Franca (1983) employed a single-subject design to investigate tutor benefits, and reported that few and inconsistant changes in social behavior had occurred as a result of the tutoring experience. It was found, however, that both tutors and tutees reported more positive attitudes toward the subject tutored (math).

Maher (1982, 1984), in two separate investigations designed to investigate social benefits to BD tutors, reported decreases in disciplinary referrals of tutors in both investigations. Top and Osguthorpe (1984) reported that BD students employed as tutors demonstrated an improved perception of their own abilities as compared with controls. These findings are somewhat stronger than some other investigations in that the Maher (1982) and Top and Osguthorpe (1984) investigations employed control groups, and in the Maher (1984) investigation, students served as their own controls.

Academic benefits. All the above investigations, in which BD students were employed as tutors, reported that the tutors had evidenced academic gain as a result of the tutoring experience. Unfortunately, with the exception of the Top and Osguthorpe (1984) investigation, none of these investigations employed both objective achievement test scores and appropriate control groups, so further research is necessary to confirm these findings. There is, on the other hand, at least one investigation in which tutor academic benefits were not realized. Gable and Kerr (1979) trained BD adolescents and tutors of younger BD students and reported that, although tutee gains were observed on criterion referenced tests, similar gains were not observed on the part of tutors, for which ceiling performance on those measures had already been observed at pretesting. Their finding supports the hypothesis of Scruggs, Mastropieri, & Richter (in press) that tutor academic gains are most likely to be evidenced when students are tutoring in an area in which they have attained accuracy, but are in need of fluency building activities.

Mentally Retarded Students as Tutors

Often, investigations employing mentally retarded students as tutors have addressed the "can it be done?" issue and assessed effectiveness by assessment of tutee gain (e.g., Brown, Fenrick, & Klemme, 1971; Lombardo, 1976; Snell, 1979). Some researchers, however, have investigated the issue of social and academic benefits of mentally retarded students as tutors. Mellberg (1980) and Truesdale (1976) indicated that mentally retarded students evidenced academic gains when employed as tutors of younger or lower functioning students.

In a more unusual manipulation of the tutoring paradigm, Custer and Osguthorpe (1983) employed EMR students as tutors of similarly aged, non-handicapped students in sign language. Their findings suggested that the amount of social contact on the playground increased between the two groups as a result of the tutoring. Although Custer and Osguthorpe (1983) employed a pre/post design which limited firm conclusions, these findings were recently replicated by Osguthorpe, et al. (1985) in a similar investigation in which control students were employed. Finally, a recent investigation by Eiserman (1985) concluded that mentally retarded students gained in academic skills and perceptions of their own ability when they acted as tutors of younger, non-handicapped students.

Summary and Conclusions

The conclusions which can be made from the present review are that (a) handicapped and remedial students can function effectively as tutors if materials and training procedures are appropriately employed (see Osguthorpe, 1984 for further information on training procedures), and (b) academic and social benefits often accrue to both tutors and tutees in these instances. Due to methodological weakness in many of the investigations, perhaps due to the inherent difficulties in conducting such in vitro research (Scruggs & Richter, in press), more detailed conclusions at this point may be premature. After reviewing the literature on the use of BD students as tutors and tutees, Scruggs, Mastropieri, and Richter (in press) offered some tentative generalizations

which appear to be supported by the studies in the present review. Scruggs, Mastropieri, and Richter (in press) concluded, first of all, that in virtually all reported investigations tutees gained academic knowledge regardless of whether or not the tutor was considered handicapped. In addition, they concluded that tutors, whether handicapped or not, can expect to gain academically if the tutoring process reflects a need for fluency building on the part of the tutor and accuracy building on the part of the tutee, or if tutors and tutees alternate roles on fluency building materials (e.g., Scruggs, 1985; Singh, 1982). Also, social benefits to the tutors have often been realized in the form of improved interaction between the tutor pair (e.g., Csapo, 1976), attitudes toward school subjects tutored (e.g., Franca, 1983; Lamport, 1982; Top, 1984), and perceptions of abilities (e.g., Eiserman, 1985). In addition, there is some evidence that using BD students as tutors may result in fewer disciplinary referrals (Maher, 1982, 1984).

Although these findings are promising, there are some areas in which tutoring does not seem to be beneficial. Many investigators have attempted to demonstrate the effectiveness of tutoring to improve "self-esteem" on the part of the tutor, and, generally, such attempts have been unsuccessful (Cohen, Kulik, & Kulik, 1982; Franca, 1983; Kreutzer, 1973, Lazerson, 1980; Sharpley, Irvine, & Sharpley, 1983). In addition, students used as tutors have not been seen to improve with respect to sociometric ratings by the tutor's classmates (Franca, 1983). It is difficult to ascertain at this point whether such failures are due to the weaknesses of the measures used, or to the fact that tutoring is not by itself an intervention of sufficient intensity to affect perceptibly such global aspects of a child's social or emotional functioning.

It is also possible, however, that tutoring gives the appearance of improving such variables as "self-esteem" without actually doing so. A recent dissertation by Roddy (1981) serves as a good example. In this investigation, students who had served as tutors improved in their "self-esteem" when teachers filled out the surveys for the students. When students answered their own self-esteem surveys, however, scores did not improve. In another study involving LD and BD students as cross-age reading tutors

(Top, 1984), results of both student and teacher rated self-esteem showed no difference between tutors and controls, but parents of tutors believed that the tutoring caused substantial growth in their child's self-esteem, consistently reporting it as one of the most important benefits of the program. Such findings suggest that teachers or parents may perceive an increase in "self-esteem" when, in fact, no such increase has been perceived by the student. It does seem, however, that tangible social benefits can accrue to the tutor, specifically in areas closely related to the tutoring process. Whether tutoring can influence broader areas of student functioning remains to be documented.

Finally, it must be concluded that, although researchers report that tutors often benefit both socially and academically, further research is necessary to determine the ultimate effectiveness of tutoring as compared with specific competing educational interventions intended to influence the same outcomes. In some previous investigations, tutoring has sometimes failed to produce gains greater than those obtained by direct, teacher-led instruction (see Scruggs, Mastropieri, & Richter, in press). At present, however, it does appear that tutoring can be of significant value, particularly if the tutoring intervention is regularly evaluated by the teacher. Krouse, Gerber, and Kauffman (1981) cautioned, "...Although it has been demonstrated that academic and social gains are freqently obtained by the tutor, this in itself is not sufficient justification for the child to be a tutor. Instead it must be shown that by being a tutor specific needs are being met" (p. 112). Meanwhile, further research could do much to uncover the exact circumstances under which tutoring is and is not effective with respect to particular educational objectives, and, in fact, the present authors are currently engaged in such an effort (Osguthorpe, Scruggs, & White, 1984).

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